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[Original Translation.]

ANTIQUE DISTILLING APPARATUS.*

Distillation, or the art of separating volatile liquids from non-volatile substances, does not seem to have been known to the Greeks and Romans. The oldest mention of it is made by Synesius, of Alexandria, who was bishop of Ptolemais in 410. The Arabic Galen, Rhazes of Bagdad, who lived in the 10th century, in his writings compared coryza with the process of distillation, for he says: "the stomach is the still, the head is the alembic, and the nose is the condenser from which the distillate drops." From this it appears that distillation must have been already generally known in that time. In fact, the Arabic medical writers make repeated mention of the process. In the 13th century, certain products of distillation, chiefly some form of distilled liquor or alcohol, were gradually introduced in the orient through Vitalis de Furno, of Basle, Thaddæus, of Florence, and Arnoldus, of Villanova. It required only a short time after it had become known as a medicine, to bring about its general use as a beverage, so that the magistrate of the city of Nuremberg found it necessary to issue an edict in 1490, strictly forbidding the sale of liquor,† on Sundays or other holidays, in houses, stores, or in public.

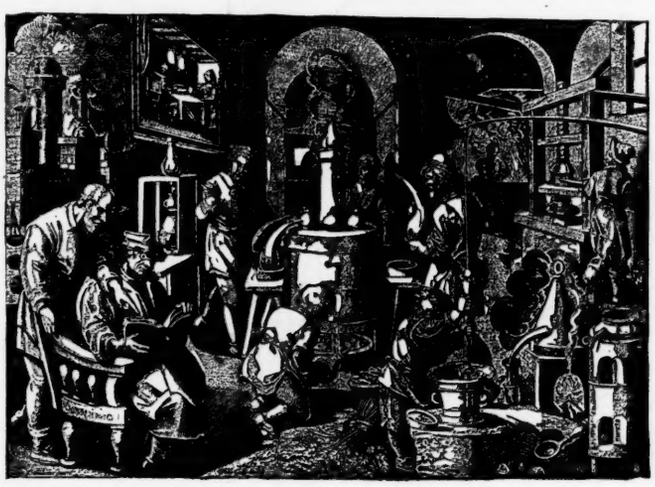


Fig. 1.—Distillation. From a copper-plate drawn by Joan. Stradanus, engraved by Ph. Galle. XVI. century. In the Germanic Museum.

According to this, the use of alcoholic beverages must have become already quite common; and as a whole series of distilled waters were then already in use in medicine, the art of distillation evidently was quite developed in the 15th century. A very exact description of the apparatus then employed is given by Hieronymus Brunschwyck in his two copiously illustrated works, "Das Nüw Buch der Kunst zu distillieren" and "Das Buch zu distillieren die zusamen gethonen ding Composita genant." Both of these have been made use of in the preparation of the present chapter by the author.

Fig. 2.—From Hieronymus Brunschwyck's work on Distillation.

According to Brunschwyck, the term *destillatio* was formerly more comprehensive than at present. The several operations of pharmacy which are now called straining, filtering, extracting, macerating, and distilling, were then all included in the art of distillation ("dropping down.")

Before the process of distillation was applied to any solid body, the latter was usually first digested in a glass-flask for the purpose of dissolving or softening it. The heat requisite for the digestion was obtained in various ways. For instance, a hole about five feet deep was dug in the cellar; into this was put a layer of unslaked lime, and upon this some horse dung. The flask or glass-vessel used for the digestion was then placed upon this and more horse dung packed around it. Luke-warm water being then poured on, the lime became gradually slaked, and a corresponding amount of heat was communicated to the packing material, which had to be renewed after two or three days. A more simple method was digestion under the rays of the sun or near a warm oven.

Solar heat was rendered more powerful by the use of a concave mirror which was placed so that the flask stood between the mirror and the sun, whereby the rays of the latter were made to fall upon the flask from both sides. Other quaint methods of heating, used in olden times, are described or directed as follows: "in an ant-hill," "in bread," "in a baking-oven," "in the belly of a horse," "in ashes," "on a water-bath," etc., etc. When digestion was directed to be made "in bread," the filled vessel was surrounded with dough, and then the whole baked in the oven with the other bread in the usual manner. "Digestion in the belly of a horse" must not be taken literally; this was performed by mixing horse's dung with hot water to a dough, and placing the vessel into this. The forms of the vessels were just as manifold as the methods of heating. It was deemed especially necessary to choose such forms as would cause any volatilized vapors to become condensed inside of the vessel, and to flow back upon the contents so as to penetrate the latter anew. Vessels of this kind are shown in the accompanying illustrations which are taken from Brunschwyck's work.

The mediæval funnels, Fig. 13, likewise had a different form from that now in use. According to Brunschwyck, they were used for separating oil and water, and for filling acid (aqua fortis) into the flasks. They do not seem to have been used for *filtering*, as the process of filtration through paper was then yet unknown. In Brunschwyck's time, turbid liquids were clarified either by straining through linen or woollen bags, or "they were distilled per filtrum." For this purpose, the liquid to be clarified was placed into a pan or plate upon an elevated place, and beside it, but on a lower level, a glass-vessel. A strip of felt or woollen fabric being then laid in the pan so that it depended into the glass, the liquid would pass, by capillary attraction, along the porous strip, and would gradually drop into the vessel. In order to avoid evaporation and loss in the case of very volatile liquids, the "destillatio per filtrum" was performed in two retorts placed at different heights (Fig. 14), the beak of the lower one being luted into that of the upper. A strip of felt was arranged to pass from one into the other as before described, and the liquid would thus be made to pass over.

* From "Aus pharmaceutischer Vorzeit in Bild und Wort." Von Hermann Peters. (See also last number.)

† We translate the German word Branntwein generally by "liquor," as it is quite commonly used as a name for any kind of distilled spirit. Brandy is a kind of "Branntwein;" but not every "Branntwein" is brandy, in our sense of the word.

One of the oldest forms of distillatory apparatus is undoubtedly the alembic (alambik or alembik; from the Greek *ambix*, cover, and the Arabic article *al*) which was "a cover" provided with a delivery tube. Such an alembic was placed upon flasks or vessels made of metal, earthenware, or glass; both having been luted together, a receiver (*receptaculum*) was placed under the delivery tube, and the distillation could then be proceeded with. Fig. 2 shows such a distillatory apparatus, together with its oven, in full operation. Though this is represented to be erected in the open air, it is probable that such operations were not carried on in such exposed places. It is a usual habit of mediæval draughtsmen, when illustrating some substance or transaction, to place in conjunction with it such other substances or persons as have some connection with it. The distillation of medicinal waters, most of which were derived from the vegetable kingdom, was carried on, not only by apothecaries, but also by certain women who were called "*Wasserbrennerinnen*" (*i. e.*, distilleresses). Evidently, the two females in Fig. 2 are intended to represent such craftswomen, while the two

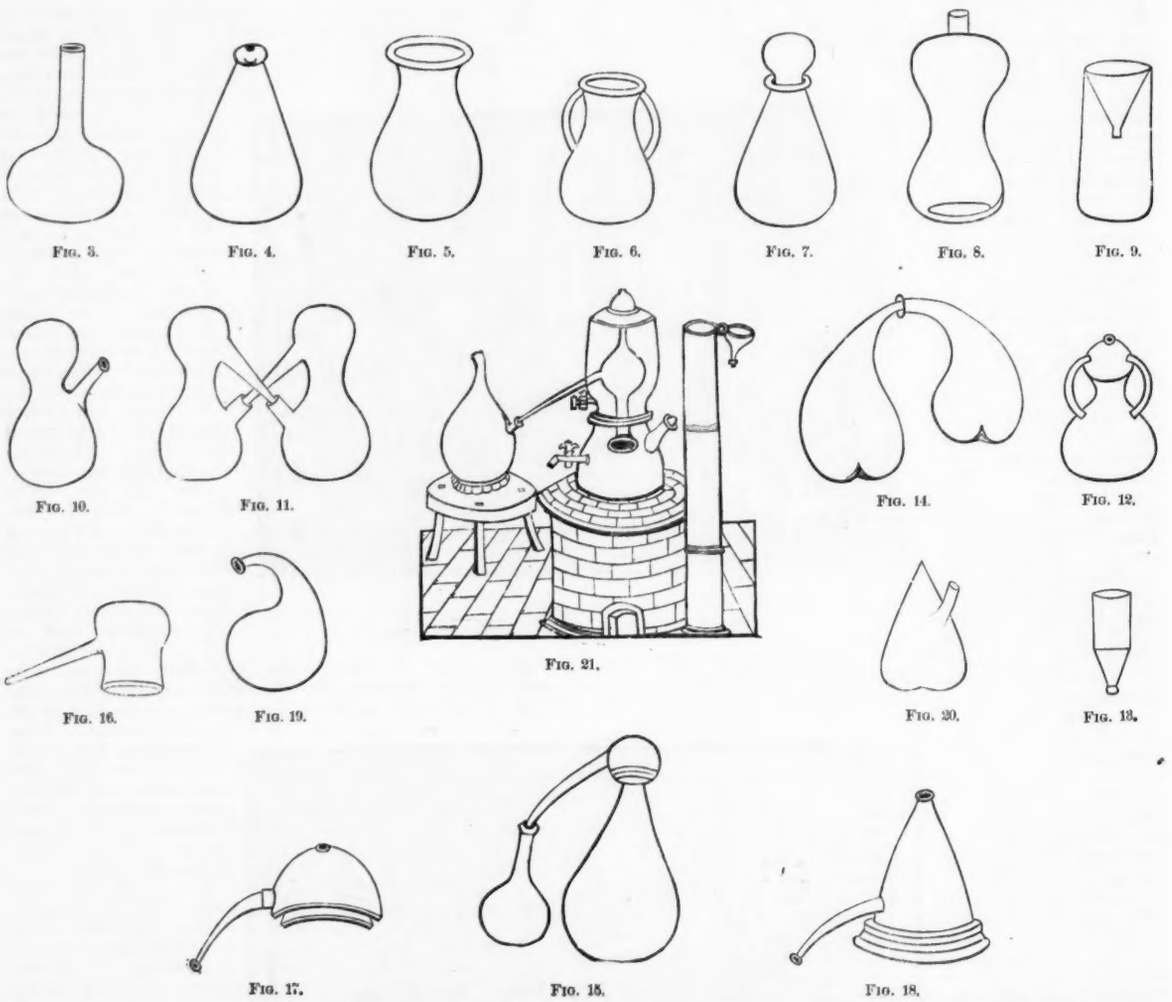


Fig. 3. Fig. 4. Fig. 5. Fig. 6. Fig. 7. Fig. 8. Fig. 9.

Fig. 10. Fig. 11. Fig. 21. Fig. 14. Fig. 12.

Fig. 16. Fig. 19. Fig. 20. Fig. 13.

Fig. 17. Fig. 15. Fig. 18.

Fig. 3.—Viola. Fig. 4.—Cucurbita or simple flask. Fig. 5.—Urinale, wide-mouthed flask. Fig. 6.—Urinale with handles. Fig. 7.—Urinale with head luted on. Figs. 8 and 9.—Circulatoria, that is reflux-condensers. Fig. 10.—Circulatorium with lateral tube. Fig. 11.—Double Circulatorium. Fig. 12.—Pelican-Circulatorium with 2 return-tubes. Fig. 13.—Funnel. Fig. 14.—Destillatio per filtrum (for volatile liquids). Fig. 15.—Cucurbit, Alembic and Receptacle. Fig. 16.—Earlier Form of Alembic. Figs. 17, 18.—Improved Alembics. Fig. 19.—Mediæval Retort. Fig. 20.—Receptacle for Volatile Liquids. Fig. 21.—One of the Forms of Distillatory Apparatus.

would, in the case of others, readily be projected into the neck of the retort. For this reason, retorts (also called "*Storchenschnäbel*" or "stork bills") were not much used for distillation proper; they were chiefly employed for "*destillatio per filtrum*" or for digesting. In order to render glass-retorts, which were often made of easily fusible glass, more resistant to the action of heat (from a naked fire) and to prevent them from bending, they were covered with a mixture of clay, tow or flax-straw, horse-dung and wine, which was laid on in the thickness of about ⅛ inch, and allowed to become perfecty dry by exposure to air. If the vessel nevertheless cracked during the distillation, a strip of cloth was coated with a cement mad of red lead, chalk, flour and white of egg, and applied over the crack. To render the cloths more fire-proof and durable, they were first soaked in salt-water and white of egg and then dried. For luting together the alembic and the receiver, various cements were in use. When a higher degree of heat was necessary for the distillation, the so-called *Lutum Sapientiæ* (i. e., cement of wisdom) was employed. This consisted of a mixture of clay, horse dung,

male ones are meant for apothecaries. The form of still-heads or alembics, made of glass, was not always the same. The simple alembic (Fig. 16) suffered from the great drawback that most of the condensed vapors flowed back into the still, whereby the distillation was much retarded. Subsequently, the form was improved by arranging a gutter or pocket inside, from which the delivery tube was made to descend. A great defect inherent to the use of these alembics was the want of a cooling apparatus, since a large portion of the vapors undoubtedly were lost through failure of being condensed. In order to avoid this, at least partially, the size of the alembic was enlarged, so as to bring a larger surface of it in contact with the air. This was best accomplished by the form shown in Fig. 18, called "Rosenhut" (*i. e.*, rosehead), which was made of glazed clay, copper, tin, or lead, and was placed upon a flat pan of the same material. For the preparation of distilled waters, this form of apparatus was the most commonly used.

The mediæval retorts (Fig. 19), on account of their unpractical form, were only suitable for the distillation of such liquids as did not foam up much, since the liquid

ground brick, powdered iron, salt-water, and white of egg. Another mixture for the same purpose was composed of clay, horse dung, cow-hair and salt-water. When a low heat only was employed, a paste made of water-soaked paper and starch paste was used. The receivers or receptacles were usually flasks, and in the case of very volatile liquids, a special form of glass-vessel with lateral spout (Fig. 20). Since alcohol or distilled liquor, as a beverage, was prepared in larger quantities, the glass apparatus which had formerly been in use soon become too small in capacity, besides being found wasteful on account of the absence of a condenser. Hence copper stills were introduced in the middle ages. Fig. 21 shows one which is not very different from some of those now in use. In order to cool the vapors properly, the head or alembic was made in the form of a "*Mohrenkopf*" ["nigger-head"; meaning in this case rather "Turk's head" or "turbaned head," on account of its resemblance to a head with turban]. This "*Mohrenkopf*" was constructed so that the alembic proper was always surrounded by water. With the alcoholic vapors a large proportion of water (or phlegma) naturally passed over. It was therefore necessary to "*dephleg-*

mate" the crude product. This was accomplished by distilling [or rectifying] it at a very low heat in a still having an alembic without gutter, and the neck of which was stopped with a large sponge soaked in olive oil. The watery vapors became (partly) condensed when coming in contact with the sponge, while the alcoholic vapors passed through it, and eventually found their way into the condenser.

In order to produce alcohol of still higher percentage, an apparatus was used, according to Brunschwyck, which may be regarded as the basis of the various forms of dephlegmators even now in use. The still was connected with a worm, which was made to pass repeatedly through a tube filled with cold water. All but the lightest vapors were thereby condensed and returned into the still, while the high-grade alcohol passed upward into the receivers. That Basilius Valentinus made use of crude carbonate of potassium (obtained by incinerating argol) for dehydrating alcohol in the XV. century is already well known, and is only mentioned here incidentally. Since the determination of alcoholic percentage by means of the alcoholometer (spec. grav.) was only rendered possible after absolute alcohol had been isolated at the end of the last century, the testing of alcohol for its strength was only an approximate one in those days. Brunschwyck thought he had attained the highest point when a linen cloth saturated with the spirit and ignited, continued to burn after the alcohol had been consumed. Of course, had the spirit been very aqueous, the remaining water would prevent the cloth from burning. Olive oil was also in use, it being required to sink when dropped into it. As olive oil has a spec. gr. of about 0.915, an alcohol of 60 per cent would satisfy this requirement. Later, the test by gun-powder was introduced. On pouring alcohol upon the powder, the latter should deflagrate after the alcohol had burned off. [The alcohol was then called "proof spirit."]

Albertus Magnus pointed out that distillates obtained from metallic apparatus are often contaminated by metal. Brunschwyck also warns against such, and an ordinance for apothecaries, passed at Nuremberg on June 7th, 1555, prescribes the use of glass apparatus for distilling liquids. As this ordinance went too far, being evidently applicable to all pharmaceutical operations, it was subsequently withdrawn, being omitted in the ordinance issued in 1592.

When lighter and lower-boiling liquids began to be introduced, the necessity arose to provide better condensers, and in consequence of this the principle adopted by the distillers of liquors were gradually adopted in pharmaceutical laboratories. The works on distillation dating from the second half of the XVI. century, therefore, show a considerable advance in this direction. Sometimes alembics were employed with two delivery tubes, each of which was separately connected with a tube passing through a cask filled with water and into a separate receiver. Yet this method was speedily recognized to be insufficient, and the next step was to lengthen the passage of the vapors by giving the condensing tube the form of a coil.

In the condensers employed in the XVI. century, no notice was yet taken of the fact that water, when heated, becomes lighter and has a tendency to rise, while cold water, being heavier, will be able to form a layer underneath it. Consequently fresh water was poured into the condenser from above at the hottest part, while it should have been made to enter it at the lowest portion.

In some cases stills were used in which provision was made to catch the more volatile and the more "phlegmatic" substances in separate receivers, by means of several delivery tubes arising from the still at varying heights.

Empyreumatic oils were prepared by means of dry distillation (*destillatio per descensum*). The oven constructed for this purpose contained a double chamber, one above the other, communicating by a central opening. Into this was laid, from above, a tinned iron diaphragm and upon it an earthen pot containing the wood or other material to be subjected to the operation, with the orifice downwards. In the lower chamber another earthen vessel with lateral outlet was fitted into the opening from below. Fire being then applied to the upper vessel, the tarry products would collect in the lower and flow out into a vessel set below the spout. When an oven was not available, the two pots, separated by the diaphragm, were fitted together, the lower one buried into the ground and fire applied to the upper. Among the oils prepared in this manner was the empyreumatic oil of the juniper, *oleum juniperi empyreumaticum*, or *oil of cade* (see this journal, 1884, page 223).

Bank-Note Cement.

SOFTEN 1 lb. of the best glue in water, boil to dissolve and strain it very clear; boil also 4 oz. of isinglass, previously softened by steeping in water; put the two together in a double glue-pot with ½ lb. of brown sugar, and boil the mixture until it is quite thick; then pour into plates or moulds. When cold, cut and allow to dry, when the pieces are ready for use. They can be carried in the vest pocket. The cement is very useful for joining pieces of paper containing drawings, torn greenbacks, etc., as it immediately softens when applied to the tongue.—*Chem. and Druggist.*

[ORIGINAL TRANSLATION.]

THE CHEMICAL NATURE OF PETROLEUM OINTMENT.

(Concluded from page 25.)

Distillation of the solid and liquid Vaseline.

After having shown that natural vaseline (that is, the residue left on distilling certain crude petroleums) consists of a solid and a liquid portion, and having also shown how these may be approximately separated from each other by fractional precipitation, the authors, Messrs. C. Engler and M. Boehm, pass on to the properties of these liquid and solid portions.

Both of these portions begin to boil at 240° to 245° C. (464°–473° F.), and at 340° C. (644° F.) yield a distillate which in the case of the liquid vaseline amounts to 75 per cent of the quantity taken for distillation, and in the case of the solid to 66⅔ per cent. The melting point of the residue from solid vaseline is 104° to 106° F., that of the distillate 97° to 99° F. The residue and the distillate from the liquid vaseline were *both* liquid, though the residue was quite viscid.

Even here it must be stated that the residue of the *solid* vaseline was entirely amorphous, while the distillate was strongly crystalline.

With regard to the constantly observed fact that solid vaseline was always converted by distillation from an amorphous into a crystalline condition, the authors made some experiments to determine, if possible, whether any change in chemical composition had taken place. For this purpose, a quantity of vaseline melting at 104° F. was distilled in vacuo, in the manner described above, to almost the last drop, whereby a distillate was obtained which congealed to a yellow wax-like crystalline mass, melting at 99° F. This was dissolved in petroleum ether, and treated with animal charcoal to decolorize it. Afterwards it was melted and analyzed, when it was found to have suffered noticeable increase of the hydrogen (from 14.17 per cent) and diminution of carbon (from 86.25 to 85.98 per cent).*

The authors then subjected American vaseline, melting at 32° and 33° C. (89.6° and 91.4° F.) to fractional precipitation, and obtained from it only 14 per cent of "solid vaseline" melting at 49°–50° C. (120.2°–122° F.); the remainder was liquid at ordinary temperature. An exact determination, however, of the proportions between the solid and liquid portions of American vaseline still requires to be made.

As the solid and liquid portions of any kind of vaseline have very nearly the same ultimate composition, and nearly the same boiling points, they cannot be separated, unchanged, by fractional distillation. The only way in which their separation can be effected is by fractional precipitation, as devised by the authors (see our February number, page 25).

Regarding the chemical nature of these solid and liquid hydrocarbons, it may be added that they are all saturated,† at least when prepared by the authors' method.

This is shown, for instance, by the fact that on the addition even of a single drop of bromine, to the liquid vaselines or to a solution of the solid ones in bisulphide of carbon, hydrobromic acid vapor is copiously given off, which would be impossible if any unsaturated compounds were present. Whether aromatic hydrocarbons are present or not, has not been determined by the authors.

From the fact that the solid hydrocarbons of vaseline are amorphous and are converted only after distillation into the crystalline form, the authors conclude that true crystalline paraffin is in general not contained in crude petroleum, and that the solid hydrocarbons observed to exist in the latter have much resemblance with the fossile wax (ozokerite), which is, indeed, regarded by many as a dried-up petroleum. Andreas Buchner, who first prepared this so-called paraffin (according to Fuchs) from the petroleum of the Tegernsee, named it, therefore, quite correctly *Berg-fett* ("mountain grease"). It is not intended to deny the existence of petroleums containing some paraffins as such; yet it seems as if it were present in them, mostly at least, in some transition form.

From the above it is evident that there is a considerable difference between *natural* and *artificial* vaselines; for, though both may be split into a solid and a liquid portion, yet these products are very much more different, chemically as well as physically, when obtained from the artificial than those of the natural vaseline. Hence, the former is much more prone to assume a granular condition, and may easily be separated by distillation into oil and ceresin. They even differ in viscidity, the artificial vaseline being much stiffer than the natural, even at the same temperature.

The want of homogeneity of the artificial, when compared with the natural vaseline betrays itself very promi-

* These are the outside figures of several given by the authors. The others show a much smaller difference. We think the latter too insignificant to base any conclusions upon them, inasmuch as the the discrepancies are within the usual errors of experiment.

† For the benefit of some of our readers, we append the following explanation:

A *saturated* hydrocarbon is one in which all the bonds of the carbon are completely saturated. For instance, marsh-gas or methane has the composition CH_4. All the 4 bonds of the single atom of carbon are, therefore, satisfied and thus "saturated."

nently during the melting and recongelation of the former. Natural vaseline, when warmed, passes only very slowly from a transparent salve-like condition into a quite viscid, and gradually into a thin-fluid state. But, no matter how the degrees of viscidity appeared during melting, when the vaseline cools it becomes very gradually thicker and though still appearing to be liquid, it insensibly passes back into a transparent butter-like condition, without any sign of solid crystalline particles. The artificial vaseline, however, although passing likewise very gradually, when melted, from a dense into a soft condition, yet changes very suddenly from the last into a thin liquid. While natural vaseline, at 176° F., still possesses more than twice, at 122° F., more than three times, and at 113° F. almost five times the viscidity of water, the artificial vaseline is, at 212° F., almost as thin as water, and reaches already at 149° F., a condition in which it will refuse to flow from the aperture of the apparatus (viscidimeter). At the same time, distinct solid particles are seen to separate on cooling, so that the final mass is really a mechanical mixture of solid granules with liquid paraffin oil. In short, natural vaseline behaves, on melting, exactly like an animal fat (lard), while the artificial does not.

Regarding the *acidity* of vaseline, there is to be distinguished between acids that may be derived from the refining process, and those which are formed or still forming through the action of air. As to the former, they are chiefly of the nature of sulphonic acids which are formed by the sulphuric acid combining with vaseline or its constituents, and a small amount of which may remain in the final product. Whether any particular vaseline has been manufactured or purified with the intervention of sulphuric acid or not, cannot be told from the product, unless this is actually shown to contain remnants of the acid. Of course, if the vaseline has been prepared by the method given by the authors, the presence of sulphuric acid or its products is excluded.

Concerning the acidification due to the oxygen of the air, we have the report of Prof. R. Fresenius. According to him, 1 gramme of American vaseline, when heated during 15 hours to 110° C., absorbed 5.22 cubic centimeters of oxygen, while German, so-called "Virginia vaseline," absorbed only 0.78 cubic centimeters. The former, after oxidation and solution in ether, showed a distinct acid reaction, the latter only a very faint one.

Since it does not appear from these results whether the "Virginia Vaseline" examined by Fresenius was, or was not, the officinal *Unguentum Paraffini* of the German pharmacopœia, which is prepared by mixing solid paraffin with paraffin oil, the authors of the paper decided to institute new experiments, which would at the same time reveal the *amount* of acid formed. In these experiments they introduced the modification, to add from time to time small quantities of water, with the expectation that this would hasten the absorption of oxygen. In each case, between 11 and 15 Gm. of vaseline were mixed with 2 to 3 C.c. of water and the quantity of oxygen below given (in the table), in tubes which were immediately sealed, and which were then heated during twenty-four hours to 110° to 115° C. At the end of this period, each tube was emptied under water, and the amount of absorbed oxygen estimated by the quantity of water taking the place of the absorbed gas. Next, the amount of acid in the water originally added, as well as in the vaseline, was estimated by means of alcoholic $\frac{1}{50}$ normal potassa solution (the vaseline having been dissolved for this purpose in ether). In each case, the largest quantity of acid was found in the vaseline and not in the water. For the purpose of comparison, two parallel experiments were made with lard, and in the case of artificial vaseline (Unguentum Paraffini) it was determined to find out which of its constituents was capable of absorbing the greater quantity of oxygen. The following table exhibits the results: The *natural vaseline* quoted is that of the Chesebrough Manufacturing Company of New York. The artificial was made by melting together one part of ceresin (Paraffinum solidum) and three parts of liquid vaseline of two different sorts. The lard employed was acid already before the experiment, but this amount of acid was deducted. The vaselines were free from acid before the experiment:

Table showing the Amount of Acid produced in Vaseline and Lard by Oxidation.

	Quantity used of		Oxygen absorbed.	Percentage of acid expressed as "potassa."	
	Material.	Oxygen.			
Natural Vaseline, I.	12.9 Gm	59.5 C.c.	34.9 C.c.	5.5 *mg**	0.043%†
" " II.	11.6	71.5	46.5	9.1	0.078
" " III.	14.7	76.3	42.9	10.5	0.071
Artificial Vaseline, I.	15.5	74.0	4.5	0.7	0.005
" " II.	11.7	69.1	4.7	0.7	0.006
" " III.	14.8	74.7	4.3	1.4	0.009
Lard.....I.	14.5	71.2	49.8	31.1	0.214
" ..... II.	14.9	57.3	42.0	39.4	0.264
Liquid Vaseline, I..	12.0	56 7	5.5	.....	.....
" " II.	11.0	56.9	4.1	.....	.....
Ceresin.....	11.4	52.7	3.0	.....	.....

* Milligrammes. † Percentage by weight.

According to these results, lard undoubtedly exhibits the greatest tendency to absorb oxygen, and still greater is the amount of acid thereby formed in the lard. For, while 42 to 46 cubic centimeters of absorbed oxygen produced only 9 to 10 milligrammes of acid (expressed as "potassa," in other words, calculated about equivalent to acetic acid), on the other hand, 49 C.c. of oxygen absorbed by the lard produced 31.1 milligrammes of acid. Much smaller is the capacity of acidification in the artificial paraffin. Among its components, the liquid portion appears to be a little more readily oxidized than the solid.

From a medical point of view, it would seem that the above results show the preference of the artificial over the natural vaseline. But the authors are candid enough to add that it would be unjust to condemn the use of the natural vaseline on account of its greater proneness to oxidation.

It should be remembered that both Prof. Fresenius' experiments and those of the authors of this paper were made under conditions which specially invited oxidation and acidification, and which never occur actually during the practical employment of vaseline.

The authors spread two samples of natural (Chesebrough) vaseline evenly upon plates of glass and exposed them to the air, near a stove, for 14 days. The same was done with artificial vaseline and lard. At the end of this period, the following quantities of acids were found (expressed as percentage of potassa).

Natural Vaseline, I	0.025
" " II	0.026
Artificial Vaseline	0.015
Lard	0.048

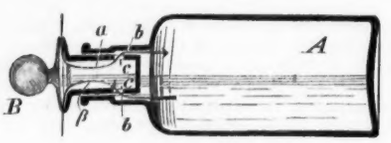
Hence, the rate of acidification, at a moderately warm temperature, is not much different in the two kinds of vaseline.

When atmospheric air was confined with specimens of the fats in closed tubes for two days, and heated to 40°–50° C., the amount of oxygen absorbed amounted to:

Natural Vaseline	2 C.c.
Artificial Vaseline	1.5 C.c.
Lard	2.3 C.c.

Replacing the atmospheric air by oxygen under these circumstances did not produce a sensible difference.

In view of the conditions required of vaseline for medical or surgical purposes, it may therefore be said that the natural is at all events sufficiently resisting to changes, and that it appears preferable to the artificial mixture of the German Pharmacopœia on account of its greater physical and chemical homogeneousness, as well as on account of its better preserving its salve-like consistence at different temperatures, compared with the artificial which is apt to become granular and, when gently warmed, quite thin-fluid. Consequently, the claim made for the artificial vaseline, that it is much more indifferent towards certain strong chemical agents, such as concentrated sulphuric acid, is of but little importance. It is only where a notable acidification might become decidedly objectionable, particularly at higher temperatures, that the artificial vaseline might be preferable.—From *Dingler's Polyt. Journ.*



DROP COUNTER.

H. Lamprecht has designed a new Tincture Bottle with Drop-Counter, in which the latter can be used for delivering drops either while still inserted in the neck, or by itself. In the neck of the bottle are two canals or grooves, *b,b*, which, when the stopper is turned in the proper direction, correspond with two small orifices, *c,c*, in the hollow stopper. Two other corresponding holes, for the admission of air, are provided for at *a*. The stopper, which is hollow (but closed at the bottom), has an expanded neck, with an orifice at two opposite points. When the bottle is inclined, the liquid finds its way along the lower groove, through the orifice *c*, into the stopper whence it may be dropped through the expanded neck. After the stopper has been partly filled with the liquid, a small portion will remain in it, when the bottle is set upright again, and the stopper may then be removed and used as a drop-counter by itself, as long as it contains any liquid.—*Germ. Pat.* 36587.

[The objections to this appliance are the obstacles to be overcome in its construction, which would render it expensive, and the difficulty with which the cavity of the stopper can be kept clean.—Ed. Am. Drug.]

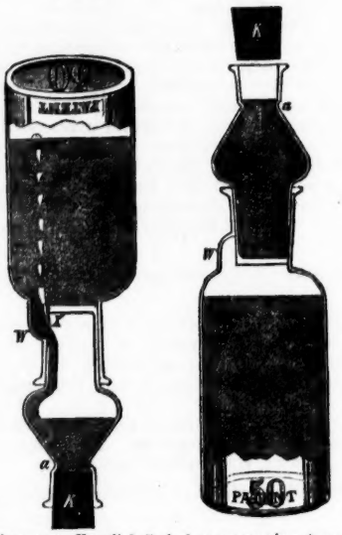
The Difference (so says a medical exchange) between a hill and a pill is that one is hard to get up, and the other hard to get down.

A NEW MEASURING STOPPER.

SIEBENMANN, VANOLI & Co., of Unterneubrunn (Saxe-Meiningen, Germany), are the patentees of the measuring stoppers here illustrated.

The patent extends both to the stopper and to the bottle. The neck of the bottle has an expansion at *W*, which, when the stopper is turned so that the orifice or slot at *X* comes opposite to it, establishes communication between the bottle and the stopper. On holding the bottle downwards, after having turned the stopper in the manner indicated (see Fig. 1), the liquid in the bottle will flow into the stopper and fill it. All that is now necessary is to turn the stopper half way around so that it is in the position shown in Fig. 2, when the bottle may be placed on its bottom again. The stopper *K* is now removed and the dose poured out.

FIG 1. FIG. 2.

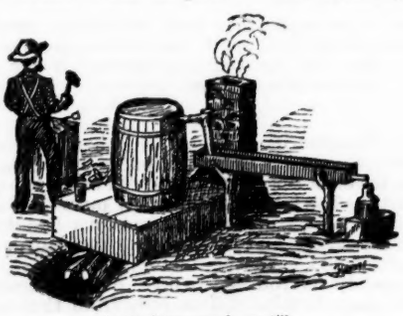


Siebenmann, Vanoli & Co.'s dose-measuring stopper.

These bottles are not intended for shop-bottles, though they can be used as such, but for holding liquids prescribed by physicians, different sized stoppers being furnished, according to the dose which is to be taken. The capacity of that shown in the cut (which is, of course, reduced in scale) is 15 grammes, or a tablespoonful. The manufacturers make bottles holding respectively 50, 100, 150, 200, 250 Gm. and stoppers holding 5, 10, and 15 Gm. The stoppers fit any of the above bottles.

MAKING OIL OF SASSAFRAS.

IN some of the interior counties of North Carolina may be seen, in operation, many primitive establishments for the manufacture of the oil of sassafras and oil of pennyroyal. The apparatus used in this work is so exceedingly rude and primitive as to appear ridiculous to most observers; but the product is of good quality, and constitutes a profitable industry. For these oils the usual style of "still" is shown in the sketch, which may be briefly described as a short trench in the ground, ending in a low flue or chimney. Over this trench is placed a closed wooden box, having a sheet-iron bottom, and an auger hole on top, through which water is poured. An ordinary barrel



A primitive sassafrass still.

stands end-wise on top of the steam-box, and has several holes bored through its bottom, and also through the top of the steam-box, allowing steam to pass freely up through the barrel. A lute of clay is used to close the joint between the lower end of the barrel and the steam-box, as well as the cover of the barrel. Instead of a "worm," a tin pipe immersed in a trough of cold water is used; and a steam connection with the barrel is generally made by an elbow branch of wood, bored out with an auger. The sassafras tree (*Sassafras officinale*) grows abundantly in this section, especially on worn-out lands, where it is usually found in dense thickets of small shrubs. The root is dug and washed free of dirt, and, after being chopped short and bruised with a hatchets is ready for the "still." This work is done by boys employed by the manufacturer, who pays a stated price per hundred pounds for the root ready for use.

The same outfit is used in the production of the oil of pennyroyal (*Hedeoma pulegioides*), which grows abundantly in the woods in many counties.

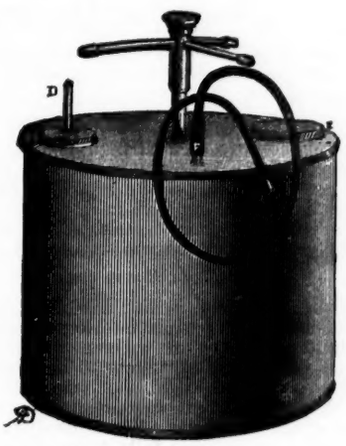
When the barrel is filled with the roots, and the cover made tight with clay, the process of distillation goes on rapidly. The steam passes through the mass of bruised roots, and is condensed by the tin tube into a mixture of distilled water and oil, and runs into a glass vessel set to receive it. Being of different densities, the oil and water rapidly settle into two strata, and one can be decanted from the other.

It is said that the operator of such a "still" can pay all running expenses and make a clear profit of $3 per day. When we consider that the cost of establishing such a "factory" is less than $10 for the entire establishment, and no chemical education is necessary on the part of the operator, the profit of the work is not to be despised.—THOMAS C. HARRIS in *Pop. Sci. News.*

A NEW BLAST AND BLOW-PIPE LAMP.

THE lamp illustrated in the accompanying cut is a round box containing two reservoirs, one *D*, being filled (not quite full) with alcohol, and the other being only about one-half full of benzin—when very high temperatures are to be attained, with gasoline. The benzin reservoir, at *E*, is ordinarily closed with a screw-cap. But two tubes project from it, one in the centre, which bears three horizontal tubes each provided with a different-sized orifice, and another to which a rubber blow-tube with mouth-piece is attached. If the wick of the alcohol reservoir, *D*, is lighted, and air is then blown into the tube *F*, vapor of the benzin is forced through that horizontal arm of the central tube which points towards the alcohol flame, and a most intensely hot flame is produced.

According as a larger or smaller flame is needed, one of the three arms is rotated toward the alcohol-burner, which may be easily done, as both arms are disengaged when using the apparatus. The flame thus produced may be used for various purposes in the arts, and also in the laboratory. The apparatus will be particularly useful where the common street gas is not available.—*Neueste Erfind. und Erfahr.*, 1886, 400.



Blast and blow-pipe lamp.

Quince Cider.—A very pleasant beverage can be produced as follows: Take a quantity of ripe quinces, cut into quarters, and with the pips, etc., removed. Boil these in a copper with double their weight of water; when boiled to perfect softness, pour the must into a vat. To this add, for every fifty pints of must, two pounds of sugar and half a pound of yeast, diluted in a sufficiency of hot water. Mix the whole well together, and allow to ferment. Then strain and bottle.—*Chem. and Drugg.*

Preparation of Pure Methylic Alcohol from Crude Wood-Spirit.—A recent patent granted to R. Piper and M. Rotten describes the following process:

Distil the wood-spirit first with lime, and purify it in a columnar still until it contains not more than two per-cent of acetone. To remove the latter, heat the distillate to boiling in a vessel provided with a return-condenser, and conduct a current of dry chlorine through it. Take out a sample from time to time, distil off the alcohol from the chloracetone, and examine the distillate for acetone, by addition of potassa and iodine, whereby iodoform will be produced if alcohol or acetone are present. When the latter is no longer to be detected, interrupt the current of chlorine gas. Next separate the methylic alcohol from the chlorine-substitution products and rectify it over lime to remove the last traces of chlorine.

[ORIGINAL TRANSLATION.]

THE RELATIVE MERITS OF THE PRINCIPAL URINARY TESTS.*

(Continued from page 27.)

III.—REACTION FOR ALBUMINOIDS.

1. *Hemialbuminose (Propeptone).*

Though the recognition of this albuminoid body has so far not become of practical importance, yet it may be useful to know the phenomena which its presence produces during the several tests for albumin.

For instance, if the urine is tested for albumin by adding to it one-fifth of its volume of nitric acid, and then boiling, and if no precipitate appears until more nitric acid has been added after cooling, which precipitate redissolves every time the urine is heated, this is caused by hemialbuminose.

Note.—The biuret-reaction for peptone (red color produced by potassa and sulphate of copper), if applied to the urine direct, is not sufficiently certain and sharp; nor is it of any importance for practical diagnosis. Hence it is passed over here.

2. *Mucin.* If urine is tested for albumin with acetic acid and ferrocyanide of potassium (see the preceding number of this Journal, page 26, No. 5), a turbidity is occasionally obtained already after the addition of acetic acid. This may be caused either by the separation of urates (in urine containing excess of uric acid), or of mucin. In such cases it is advisable to use a second test, besides that above mentioned. Add to the urine, already rendered turbid by acetic acid, some nitric acid. If the turbidity disappears, it was caused by mucin; but if it remains or becomes more intense, it may be due to urates or to albumin. On heating, the former dissolve, but the latter does not.

IV.—REACTIONS FOR BLOOD.

1. *Heller's Hæmoglobin Test.*

Render the urine strongly alkaline with potassa, and heat to boiling. The resulting precipitate of phosphates will be found colored red if blood-pigment present.

Criticism.—This test permits the recognition of the coloring matter of blood, not only in hæmaturia, but also in hæmoglobinuria, with great certainty. Neither normal nor icteric urine gives this reaction, even when loaded with urinary coloring matters. It is only after the use of rhubarb, senna, etc., that the urine may give a similar reaction. In sharpness, the test is but little inferior to that of the spectroscope, which latter is rather foreign to the practitioner. Of course, for distinguishing between hæmaturia and hæmoglobinuria, the microscope cannot be dispensed with; nor the spectroscope for recognizing very small quantities.

2. *Almén's Reaction.*

Make an emulsion of equal parts of tincture of guaiac and oil of turpentine. Allow a portion of this to flow cautiously upon the urine. A blue ring at the line of contact indicates blood coloring matter.

Criticism.—This test is very handsome and sharp, but is not necessary, as the preceding one is all-sufficient.

IV.—REACTIONS FOR BILE.

General Remarks. Urine which is rich in biliary pigments, and coming from plainly icteric patients, is recognizable without difficulty, or without requiring special tests, from its peculiar dark-yellow to beer-brown color, and the yellow tint of the foam. Such urine gives the bile reactions with great distinctness. In such cases, however, in which the diagnosis of jaundice is doubtful, even the chemical reaction sometimes fails to respond. For this reason, the different bile-tests do not possess such an importance in practice as the albumin and sugar tests. Nevertheless, the most reliable methods will be enumerated here.

1. *Gmelin's Test.*

Into a small test-tube pour a few cubic centimeters of nitric acid, to which a drop of fuming nitric acid (that is, such as contains nitrous acid) has been added. [The kind of acid required may easily be obtained by heating a little nitric acid with a small piece of sugar or starch.] A few C.c. of the urine to be tested are then taken up by a pipette and cautiously transferred to the surface of the acid, by allowing it to flow, drop by drop, along the side of the test-tube. The two liquids must remain entirely separate. At the line of contact, there will appear a colored ring which is green above, and blue, violet, and red below. Often only a green and brownish-red ring is noticed.

Criticism.—If the colored rings are very distinct and bright, the presence of biliary pigments is proven. If they are imperfect, this may be due to the presence of indican. The test is neither absolutely certain nor very sharp. If only small amounts of biliary pigments are present, the test often fails altogether.

2. *Rosenbach's Modification of Gmelin's Test.*

Filter a rather large volume of the urine to be tested, and lastly, pour upon the inner surface of the filter some nitric acid containing nitrous (see under No. 1). The colors mentioned in the preceeding test will make their appearance.

Criticism.—The author considers this modification of Gmelin's test to be more sharp that the original. Biliary urine, diluted with 19 parts of water, failed to give the original Gmelin's reaction, but responded to Rosenbach's improved test, by giving a distinctly blue and red ring. The test is also very convenient.

3. *The Chloroform Test.*

If icteric urine is acidulated with a little acetic acid, and then shaken with chloroform, the latter assumes a yellow color. If the urine is separated, Gmelin's test may be applied to the chloroform. On addition of a trace of aqueous solution of iodide of potassium, it assumes a green color. The same happens on adding a drop of dilute solution of ferric chloride, according to Penzoldt.

Criticism.—If much biliary pigment is present, this test furnishes a very fine reaction. It is, however, not very sharp. Urine containing considerable bile, after being diluted with four volumes of normal urine, still caused the chloroform to assume a yellow tint, but failed to give any further distinct reaction. A slight yellow tint is imparted to chloroform sometimes also by non-icteric urine. The execution of the test is also sometimes interfered with by the reluctance of the chloroform to separate from the aqueous liquid.

4. *The Test with Sulphuric and Nitrous Acids (Masset's Test).*

To about 2 C.c. of urine add 2 or 3 drops of concentrated sulphuric acid, and a crystal of nitrite of potassium (better, nitrite of sodium, according to Penzoldt). If biliary pigments are present, a fine deep-green color is produced.

Criticism.—If an abundance of pigments are present, the reaction appears very distinctly. In presence of small quantities, however, it is rather indistinct.

5. *The Test with Acetic Acid after Filtration (Penzoldt's Test).*

The author (Dr. Penzoldt), here mentions a test which he has discovered accidentally. It is based upon Rosenbach's method of absorbing the biliary pigments by filtration, and then applying acetic acid.

Filter the urine through an ordinary filter of moderate size. In the case of urine containing only a small amount of bile-pigments, it is advisable to pass a considerable volume of the urine through a *double* filter. The latter is then allowed to dry and a few cubic centimeters of acetic acid are then applied to it in such a manner that every portion of it is acidulated. The drainings are best caught in a vessel of wide diameter, so as to obtain a very shallow layer of liquid. At first, the acetic acid is yellowish-green (quite distinct from the color of the urine), and, after standing some time, it becomes green and even bluish-green. A gentle warming of a portion of the liquid hastens the reaction. On drying, the filter shows a green edge.

Criticism.—The author states that this test has yielded so far very satisfactory results. Strongly icteric urines, even when diluted with 19 volumes of neutral urine, and which gave either only indistinct or altogether negative reactions with other tests, still responded to this test quite distinctly. Normal urine does not give the reaction. It seems therefore, unless the contrary is proven hereafter, that this test deserves recognition on account of its sharpness and convenience.

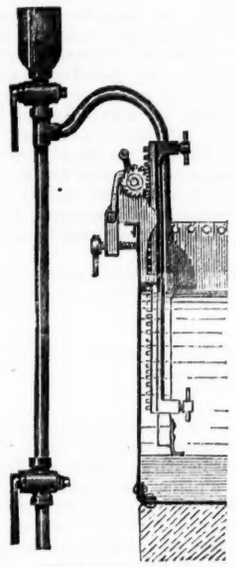
6. There are several other tests which are very sharp (for instanee, that of Huppert), but as they are too circumstantial to be used by the practitioner or for clinical purposes, they are here omitted.

* Abstract from the pamphlet of Dr. F. Penzoldt, "Aeltere und neuere Harnproben und ihr praktischer Werth." 8vo, Jena, 1886.

Russian Phosphorus.—Since 1871, when the manufacture of phosphorus was first undertaken in Russia (on the Danilicha River in the government of Perm), the product of this factory has increased from 347 puds (111½ cwt.) to 4,300 puds in 1884. Russian phosphorus has displaced the English product, and now supplies two-thirds of Russian requirements. Another factory at Irbit, started in 1877, now produces from 480 to 6,140 cwt. annually. The method of manufacture differs only from that in vogue elsewhere in the moulding of the product. The moulds are 2 inches high, 22 inches long, and 12 inches wide. At the bottom of the container are 240 cavities, ½ inch deep by 1 square inch surface. Water is poured in the container, and to this is added phosphorus purified with a mixture of chromate, about 5 lbs. being required to fill all the cavities. By using these moulds the Russian workman is enabled to turn out from 10 to 12 puds (360 to 432 lbs.) phosphorus per diem, while by the English method only 2½ to 3 puds (90 to 180 lbs.) can be moulded in a day of twelve hours. The phosphorus, after moulding, is packed in tins containing 10 lbs. each.—*Chem. and Drug.* from *Chem. Zeit.*

A PRACTICAL SIPHON.

WHILE the siphon here illustrated does not involve a new principle, yet it is so simple and serviceable, and so easily constructed, that it ought to find many users. The inside or shorter leg, contained within the vessel from which liquid is to be drawn, is held by set-screws at any desired level. The upper stop-cock having been opened and the lower one closed, enough of the liquid is poured into the cup to fill the accessible part of the siphon. On now closing the upper and opening the lower stop-cock, the liquid will continue to flow until the siphon "sucks." Of course, the material of which the siphon is constructed must be such that it will not be attacked by the liquid. This form of siphon is made (in various kinds of metal, etc.) by E. E. Rost & Co., of Dresden.—After *Der Seifenfabrikant.*



Rost & Co.'s siphon.

An Unexplained Explosion.

MR. EDWIN JOHANSON, Pharm. Mag., editor of the *Pharmaceutische Zeitung für Russland*, reports the details of a very remarkable explosion which happened during an analytical operation, and which requires explanation.

He had received the stomach of a man suspected to have died of poison. The contents were bright green, and deposited an intensely green precipitate, which led to the suspicion that Schweinfurt green had been used, and this suspicion was confirmed by the fact that both copper and arsenic were found to be present in large quantity, as shown by the qualitative reactions of a small sample.

A portion of the mass (360 Gm.) was now treated in the usual manner with chlorate of potassium and hydrochloric acid, to destroy organic matter. All free chlorine having finally been driven out, the filtered liquid was treated with hydrosulphuric acid, the precipited sulphide of arsenic and sulphate of copper collected on a filter, washed with dilute solution of hydrosulphuric acid, and then treated on the filter with sulphide of sodium. The filtrate, which contained all the sulphide of arsenic, was evaporated to a small volume, mixed with carbonate and nitrate of sodium, and evaporated to dryness.

This evaporating and drying was performed in a perfectly clean open platinum capsule of 143 Gm. weight, and 11.5 Cm. (4½ inches) upper diameter, in which the same operation, as well as the ignition, had been performed for years.

In the present case, instead of a quiet oxidation and harmless deflagration, there occurred an explosion with very loud detonation in the very beginning of heating. The thick platinum capsule had been shattered in a downward direction with great force, the bottom being torn in a most remarkable manner, and the upper portion being driven into the iron triangle upon which it rested. The quantity of sulphide of arsenic that was present appears to have been 1.749 Gm., the amount of carbonate of sodium added about 7 Gm., and of nitrate of sodium 15 Gm. During the destruction of the organic substance, there are formed certain organic compounds which are precipited by hydrosulphuric acid. These precipitates are organic sulphur and chlorine compounds, and are soluble in ammonia, as well as in sulphide of ammonium or sodium. They are formed in particular abundance from carbohydrates.

What the special cause of the explosion was in the above described experiment has not been ascertained. Mr. Johanson suspects that the *proportions* of the several ingredients had something to do with it.

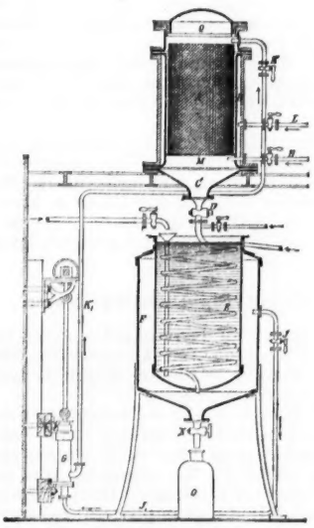
A NEW STILL FOR ESSENTIAL OILS, ETC.

BREITHAUPT has patented the apparatus here described, for the purpose of distilling, or rather displacing such essential oils as are contained, within the respective plants, in oil-cells, which can be ruptured by heat. The process involves the application of steam, not for the purpose of distillation, but for rupturing the oil-cells and setting free the oil, which is then displaced by a pressure of air.

Of course, this method of obtaining oils is not applicable in all cases, since many essential oils cannot be displaced in this manner. But it is claimed for it, that, wherever it is applicable, it extracts the oil much more thoroughly, and with less injury to its fine flavor. Originally, the apparatus was devised for the purpose of extracting the essential oil from *hops*. As the oil, while being pressed downward through the material by the pressure of air, naturally will carry along with it other constituents, particularly resinous particles, it will be evident that the products obtained by this process must be rectified in order to be freed from foreign substance. Yet this has to be done in most cases even when regular steam distillation was used as the first step of the process.

The apparatus consists of a macerator *A*, *B*, a condenser *E*, *F*, and a receiver *O*. The herb or other material to be extracted is packed tightly into a sieve-basket *A*, which is placed in the macerator, after which the latter is hermetically closed with the cover *Q*. Stop-cocks *D*, *N*, and *K* being closed, steam is admitted to the macerator by the stop-cocks *L* and *H*. The steam entering through *L* only surrounds the inner vessel *B*, which contains the basket, but cannot enter the latter. This supply of steam is kept up throughout the operation. The other jet of steam, entering through *H*, penetrates the material, disintegrates the oil-cells and liberates the oil. After about ten minutes this is shut off. Next the air contained in the body of the condenser *F* is exhausted by opening the stop-cock *J* and setting the air-pump going. A sufficient vacuum having been produced, compressed air, furnished by the same air-pump, is admitted on top of the material in *A*, and the faucet *D* having been opened, the displaced oil, etc., passes into the condenser and collects over the closed stop-cock *N*. The whole operation is repeated four or five times, as may be required, and in the intervals, when the condenser *F* is shut off from the macerator, the obtained oil is drawn off into the receiver *O*. The whole process is said to occupy only a short time, in favorable cases only about one-half hour. (Germ. Patent, Supplement, No. 36,885, March 4, 1886.)

If this method is found practicable, it will evidently be advisable to place a series of macerators side by side, so that while one is being treated, the others may be emptied and charged without having to interrupt the operation.



Breithaupt's essential oil still.

Drugs and Chemicals in Japan.—The *Chemiker Zeitung* says that 55 to 60% of the drugs and chemicals used in Japan in 1883–4 were imported from Great Britain. During 1885 the proportion fell to 40%, and importations from Germany were increased by 25 to 30%. The following hints are given respecting technical chemicals: Thirty-two per cent chloride of lime is the only variety used in Japan; it should be packed in tin-lined cases; caustic soda of 60 to 62 per cent, in cases of 450 lbs.; soda ash of 48 to 52 per cent, in casks of 250 lbs.; red chromate of potash in 1 cwt. casks; bicarbonate of soda in 1 cwt. casks, and carbonate of soda in 350 lb. casks are generally used. Chlorate of potash is very extensively employed in the manufacture of matches, an industry which is making considerable progress.

Antiseptic Appliances.

AT the recent meeting of the Medical Society of the State of New York, Dr. A. Gerster exhibited a set of appliances which will enable physicians to meet any emergency requiring the use of antiseptic dressings without delay. The entire collection of materials is of so simple a character, and its preparation is so thoroughly allied to the business of the pharmacist, that we reproduce his list of articles, believing that it would be profitable for pharmacists in towns of some size to undertake their manufacture and sale.

1 Leather bag, 8½x18 inches, having loops inside for holding bottles and other articles; an inside pocket for small articles and an outside pocket for dressings. (The bag is placed in the nest of large basins and fastened to them by means of two leather straps and buckles.)

1 Bottle, 2 oz., in wood box, with corrosive sublimate. Box marked:

"Corrosive sublimate..... 1.
Alcohol.....10.
1 teaspoonful to a quart of water; strength, 1:1,500."

1 Bottle, 4 oz., in wood box, carbolic acid, pure. Marked: "4 teaspoonfuls to a quart of hot water; shake well; strength, 3 per cent."

1 Bottle, 2 oz., in corrugated metal box, chloroform.

1 Bottle, 4 oz., for catgut ligature, in corrugated metal box, with glass reels.

1 Dusting Box, hard rubber (Gerster's) for iodoform.

1 Tin Can, with ½ lb. of ether.

1 Long Glass Jar, with rubber cork and metal screw top, for rubber drainage tubing, with 5 parts carbolic solution to 100 parts water.

1 Long Glass Jar, like above, for compressed carbolized sponges.

1 Large Broad Handle Scissors, stout, for cutting gauze.

1 Stout Ring Handle Dressing Forceps, for drawing forward tongue in anæsthesia.

1 Razor. 1 Teaspoon. 1 Piece of wax.

1 Ormsby's ether inhaler and 1 Esmarch's chloroform mask, both inclosed in rubber-cloth bag.

1 Large Size Fountain Syringe, with 3 glass points and rubber tubing; also in rubber-cloth bag.

1 Hypodermic Syringe, in metal case, with screw cap to prevent evaporation, for probatory puncture.

1 Stiff Nail Brush, solid wood back.

1 Dozen large and small Safety Pins.

1 White Linen Pouch, for the reception of instruments.

1 Nest 6 Tin Basins, block tin, 6 in. diameter.

1 Nest 6 large oblong Tin Basins.

The boxes holding the bottles of corrosive sublimate and carbolic acid are of box-wood with screw tops, such as are commonly met with in drug stores. The corrugated metal boxes are likewise to be had in nearly every pharmacy. The dusting box for iodoform might be replaced by an ordinary glass pepper-box with a rubber cap or a cap of wash-leather and rubber band, for security. The long glass jars are such as contain the preserved fruits brought from Wiesbaden and are to be had of dealers in fine groceries. The ether-inhaler, chloroform-mask, and dressing forceps would be obtainable from dealers in surgical instruments, and the tins from a dealer in house-furnishing ware.

The catgut for sutures can be bought in quantity and carbolized by the pharmacist. The sponges can likewise be cleaned and carbolized, and both can be sold at a good profit. The rubber for drainage tubes is already kept in stock in most stores, and needs only to be cut to the length which will fit the jar, and properly cleaned.

Preserving Distilled Water.

MR. J. N. HURTY, of Indianapolis, gives the following directions for preparing and keeping distilled water, so as to avoid the ropy sediment which is liable to form under ordinary circumstances:

Say the still is of five gallons' capacity, not more than four should ever be distilled therein; take then four gallons and a quart of good clear well water; boil violently in a bright tin vessel for ten minutes—this drives off almost the last trace of ammonia; then introduce into the perfectly clean still; start the process; reject the first half gallon, and save the succeeding two and one-half gallons.

This is to be stored as follows: Prepare an empty carboy by boring with a rat-tail file a hole in the shoulder; through this hole introduce a glass siphon, made air-tight at the point of contact with the carboy by slipping over the siphon tube a piece of rubber tubing, and on the longer arm of the siphon place another piece of rubber tubing about four inches long, provided with a pinchcock. Into the mouth of the carboy fit a perforated cork, holding a glass tube filled with cotton; this is to be inserted as a stopper, the tube filled with cotton acting as a vent. All the air entering the carboy will be drawn through the cotton, thus being filtered perfectly free from motes. It is these motes, or dust particles, among which the seeds of the confervæ exist that cause the ropiness which we wish to avoid.

The distilled water in dropping from the mouth of the condenser into the receiver, as a rule, becomes contaminated with air motes, and unless these be removed before the water is finally deposited in the carboy, confervoid growths will appear.

To accomplish this, the distilled water must be brought to a boil in a bright tin vessel, the warm carboy thoroughly rinsed with it, and when at last the container is full insert the perforated stopper carrying the tube filled with cotton; start the siphon, and now if the stopper is not removed the entire contents may be used, as required, and not a single fleck will form therein.—*Western Druggist.*

Tooth Powders.

IF a dentifrice consists too largely of fine and light dry powder, such as precipitated chalk, it is inconvenient and wasteful in use. Some is blown out and about every time the box containing it is opened or shut; and when the brush is charged and dipped into water to moisten the powder, much of it leaves the brush and remains in the water; or if instead the dry powder be conveyed direct to the mouth, it is choking and very unpleasant. This not unimportant property is somewhat modified by a large proportion of soap, but more perfectly controlled by a small quantity of fibrous material, such as orris root, which is by no means only useful for its aroma and flavor. About 10 per cent is sufficient, but as the delicate violet odor and not unpleasant bitterness of orris is a good disguise for soap, it may be harmlessly added up to 20 per cent or more.

A very easily made, smooth, and agreeable powder may consist of soap, chalk and orris in equal weights; but a better formula is

	Parts
Fine dry neutral hard soap	3
Precipitated chalk	4
Fine dry orris root	1

Made with a good sample of soap, such a powder is almost tasteless, and even without extra flavoring not unpleasant. Scenting is often overdone. It is quite doubtful if the usual "antiseptics" in the small quantity tolerable in a dentrifice add anything to the germicide power of soap. When possible, individual taste should be consulted in prescribing flavors, as even the most popular ones are objectionable to certain idiosyncrasies. For instance, the generally appreciated and much-used wintergreen is extremely obnoxious to some people. Perhaps the most universally approved and safest is otto of rose, but the real, and not the geranium oil (which is bitter), must be used; and though only three drops to the ounce of powder should be required, it is nevertheless unfortunately expensive.

When a slightly rougher powder is demanded, some of the chalk may be replaced by fine cuttle-fish bone. The following simple prescription, safe and effective, may be entrusted to any dispenser:—

Pulv. saponis albi	℥ iij.
Cretæ præcip	℥ iij.
Pulv. ossis sepiæ	℥ i.
Pulv. rad. iridis	℥ i.
Olei rosæ	gtt. iij.

Misce.

—*Jour. Brit. Dent. Assoc.*

Quinine Pills.

IN the December number of the *Pharmaceutishe Zeitschrift für Russland*, Mr. Theodor Waage gives a method of preparing quinine pills which is well deserving of notice. Quinine hydrochlorate is mixed with hydrochloric acid in the proportion of about six drops to five grammes of the salt. The acid is to be added very cautiously drop by drop, and incorporated with the quinine salt. One drop too much would make the pill mass smeary, but when properly prepared, it admits of being worked very easily. The advantages of the pills made in this way are, that, in the first place, they are so small that they can be swallowed with ease, even when containing as much as 0.25 gramme, nearly four grains of quinine salt, being only one-half the size of pills made with mucilage. Moreover, the pills have an elegant brilliant white appearance that renders them agreeable to the patient. They soon become hard without losing their ready solubility, and as they do not become soft to exposure by moist air, they are very suitable for the supply of travellers in tropical countries.

Keeping Labels.—A correspondent says: This is my plan: I had a drawer made measuring 2 feet 6 inches wide, by 21 inches long, and 2¾ inches deep, outside dimensions, and divided into small compartments of 3¼ inches long and 1½ inches wide, with a small elastic band round two packets of labels. I may add, the depth of each compartment is two inches. It is fixed in centre of counter and is very handy. The reason I put two packets of labels in the band is that it holds them firmer.—*Chem. and Drug.*, Nov. 13th, 1886.

IMPROVED CONDENSER.

WALTER some time ago introduced a new form of condenser, in which the volatile vapor of a distilled liquid does not pass through a central tube kept cold by water circulating outside, but the water is made to circulate in the inner tube, and the vapors are made to pass on the outside of this. The inventor has recently introduced an improvement which makes these condensers act with still greater perfection.

In Fig. 1 is represented a flask with long neck, into which is inserted a tube, closed at the bottom, and, into which a whole series of bulbs have been blown. The diameter at the bulbs is such that they closely approach (but is somewhat less than) the inner calibre of the neck of the flask. Into this bulb-tube descends a narrow straight glass-tube through which a current of water is conveyed into the condenser, which water finds its exit at *d*, where it is carried off by suitable rubber connections.

When a liquid is to be heated in the flask so as to prevent evaporation, which is ordinarily accomplished by connecting the flask with an upright condenser, it is only necessary to insert the bulb-tube condenser of water into the neck, the current of water having previously been already started. This arrangement has the additional advantage that no cork or other fittings are required for making any connections. All that is needed is to introduce the condenser into the neck and to let it hang there. When it is no longer wanted, it can be taken out (and, if necessary, replaced again) at an instant's notice.

The most suitable proportions in size, for an apparatus of small dimensions, are as follows, say for a flask having a diameter (of body) of 9 Cm. (3½ inches), with a neck of 2 Cm. (¾ inch) in diameter, and 18 Cm. (7 inches long):

Size of main-tube of condenser 5 Mm. (⅛ inch.); diameter of bulbs 16 Mm. (⅝ inch.); inner tube about 2 Mm.

In order to prevent actual contact between the hot neck of the flask with the cold bulbs of the condenser, and to keep the latter in a fixed condition, three pellets of glass are fused upon one of the bulbs at *v*, both above and below.

It might be supposed, at first sight, that such a condenser is not sufficiently effective. Perhaps the calibre of the inner glass-tube may appear altogether too small. But, on trial, it will be found to be perfectly sufficient. Supposing ether is heated to a rather brisk boil in one of these flasks, so that a continuous thread of condensed liquid runs off from the lowermost bulb, it will be found—if an eight-bulb tube is used—that the ether vapor is completely condensed already at the fifth bulb.

A very ingenious method of using these condensers is shown in Figs. 2 and 3. When liquids are to be distilled which attack cork or rubber, and where it is desirable that the vapor shall come in contact only with glass, an arrangement like that in Fig. 2 may be used.

The retort at the left bears in its tubulure a glass-tube ground so as to fit the neck. This tube serves to receive a thermometer, and to facilitate the transmission of temperature, a little mercury is poured in. At *c*, the retort is connected by a ground joint with the globular receiver. This carries in its neck one of Walter's condensers, the supply of cold water being afforded by the attachment to the water-service, as shown in the cut. The volatilized vapors of the liquid, made to boil in the retort, pass over into the receiver, where they are condensed by contact with the cold condenser. [There being no way by which an excess of generated vapor can be prevented from bursting the retort or receiver, we think the arrangement in Fig. 3 preferable.]

In Fig. 3, the retort enters the receiver through the tubulure *c*, and the receiver itself has a very long neck into which one of Walter's condensers is inserted without being fitted tightly into the neck. In the cut, the condenser is represented as a straight tube, while in fact it is recommended to be of the bulb-shape described above, the straight tube being chosen merely to facilitate the sketching of the apparatus. At the bottom of the condenser is an outlet provided with stop-cock. Any vapors carried over into the condenser will become very thoroughly condensed in the long neck, and collect in the bottom of the condenser, where they may be drawn off from time to time. This form of apparatus, therefore, may be used for collecting different fractions of a distillate separately.

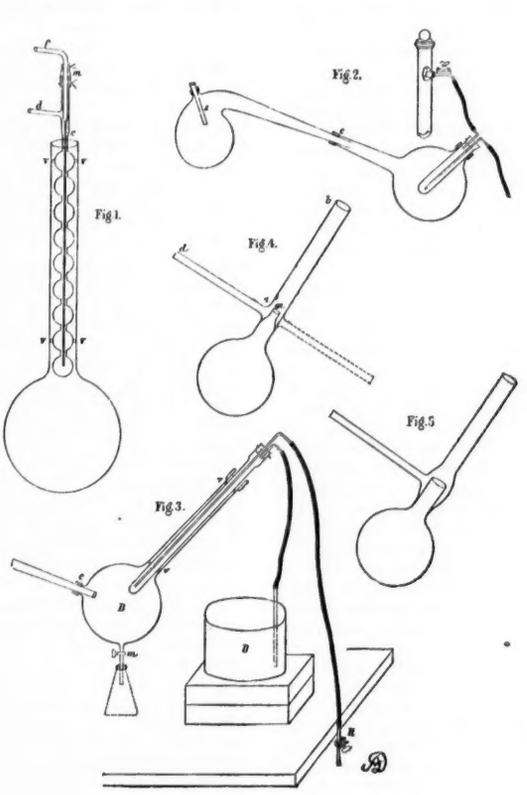
In order to arrange a flask so that the distillate may either run back into the flask or be collected outside, a flask of the shape shown in Fig. 5 may be used. This is placed over the water-bath, or other source of heat, in the oblique position shown in the figure, so that the lateral tube points obliquely upwards. This tube is closed with a suitable stopper, and a Walter's condenser is inserted into the long neck. The first portion of the condensed liquid will collect in the pocket formed by the inner neck and the surrounding tube, but as soon as this pocket is filled, the liquid will run back into the flask. When the operation has lasted long enough, and it is desired to distil off all the volatile liquid, it is merely necessary to turn the flask through an arc of 180°, without altering its inclination. The lateral arm formerly pointing obliquely upwards, will now point obliquely downwards, as shown by the dotted lines in Fig. 4, and the distillate may be received in a vessel placed below.

Walter, however, states himself that these forms of apparatus are not much suitable for distilling off liquids of low boiling points, because the ascending vapors rapidly heat the descending condensed liquid, and a good deal is lost. Better results are obtained with higher boiling liquids, and the best with those which easily solidify.

Thus the flask shown in Fig. 4 is extremely serviceable in preparing acetanilide (the *antifebrin* of modern therapeutics), particularly as no thermometer is required for the subsequent distillation, the proper fraction to be collected being recognizable through the fact that it solidifies quickly to a hard mass.

Flasks of small size of this construction may have a diameter (of body) of 9 Cm. (3½ inch.); length of neck, from *a* to *b*, 15 Cm. (6 inch.); diameter of neck, 2 Cm. (¾ inch.); diameter of orifice at *m*, 1 Cm. (⅜ inch.); length of lateral tube, *a* to *d*, 15 Cm. (6 inch.); diameter of do., 5 Mm. The condenser suitable for this is of the size described above.

In many cases, it is not necessary to use any cooling liquid at all, but a simple current of cold air may be aspirated through the condenser by means of the filter pump.* —After *Journ. f. prakt. Chem.*, 1886, 427.



Walter's condensers.

Suspended Crystallization.

IN a paper on the above topic read by Prof. J. M. Thomson before the Royal Institution of Great Britain, the author cited a number of experiments, illustrating the influence of unfiltered air in starting crystallization in supersaturated saline solutions, from which we quote the following:

Glauber's salt (sulphate of soda) affords a very good example of this. If the crystallized sulphate be added to boiling water in a flask, as long as it is dissolved the water will take up nearly twice it weight of salt. If this solution be now allowed to cool in an open vessel, an abundant deposition of crystals will take place, as the water when cold will only dissolve about one-third of its weight of crystallized sulphate. But if the flask be tightly corked or stoppered with cotton wool whilst the solution is boiling, it may be kept for several days without crystallizing, although moved about from place to place. On withdrawing the plug, however, the air on entering the flask will produce a slight disturbance of the surface of the fluid, and from that point beautiful prismatic crystals shoot through the solution until the whole has become perfectly solid.

It is not necessary in preparing such solutions that the flask be closed completely with a stopper, as we find that plugging the neck with cotton wool exercises the same effect in preserving the solution, and that the air which enters the flask during the cooling becomes thoroughly deprived of its crystallizing influence, evidently undergoing a filtering process. A very good instance of the inability of filtered air to start crystallization is afforded by a

* These forms of apparatus are made by F. A. Kühnlenz, of Frauenwald, near Schmiedefeld, in Thüringen, Germany. They may be obtained through dealers in chemical apparatus. (See advertisements.)

solution of alum saturated at 194° F., and allowed to cool in a flask stoppered with cotton wool in the manner previously described. On withdrawing the plug of cotton wool, the crystallization, which in this case takes a much longer time to commence than with the sulphate of soda, will be seen beginning at various points on the surface of the liquid, and will spread slowly from these, octahedral crystals of alum half an inch or more in length being built up in a few seconds.—*Pharm. Journ. and Trans.*

Relationship between Hydrastine and Narcotine.

M. Freund and W. Will have obtained very interesting and important results during a study of the chemical nature of hydrastine from Hydrastis canadensis.

Perrins discovered hydrastine (which occurs alongside of berberine) in the mother-liquid left after the separation of berberine by means of dilute acids. The mother-liquid is cautiously neutralized with ammonia, until a permanent precipitate of a dark-colored resin forms which does not redissolve on stirring. The liquid is then filtered, and ammonia added to the filtrate, when a yellowish-brown precipitate separates which is several times recrystallized from alcohol, and then constitutes hydrastine, forming colorless, shining prisms.

Shortly afterwards the base was examined by Mahla, who assigned to it the formula $C_{22}H_{23}NO_6$.

Freund and Will have met with difficulties in the preparation of hydrastine. The above-mentioned yellowish-brown precipitate is produced in copious quantity, but it is difficult to recrystallize. Nor could the authors obtain a yield of 1½ per cent from the root, as stated by Perrins. For this reason, they preferred to extract the finely powdered root with ether. The residue left on evaporation of the latter is dissolved in hot alcohol, and the filtrate allowed to cool, when crystals of nearly pure hydrastine separate. The base is remarkable on account of the ease with which it crystallizes. It forms crystals belonging to the rhombic system, melts near 132° C. (269.6° F.), and is lævogyre in chloroformic solution, but dextrogyre in aqueous solution made with the aid of hydrochloric acid.

When hydrastine is oxidized either with permanganate of potassium or with nitric acid, it is partly converted into *opianic acid*, identified by ultimate composition, melting-point, and all other properties. The oxidation by permanganate is made as follows:

Five Gm. of hydrastine are dissolved in an excess of hydrochloric acid, the solution diluted to about 2 liters, and gradually mixed with a cold solution of 10 Gm. of permanganate of potasssium in 2 liters of water. The mixture is then rendered faintly alkaline with sodium carbonate, filtered, and strongly concentrated. On supersaturating with diluted sulphuric acid, a substance is deposited which is removed by filtration. The filtrate is dilated with ether, and the residue of the ethereal solution, together with the substance remaining on the filter, recrystallized from boiling water, being at the same time treated with animal charcoal. The colorless needles thus obtained correspond to the composition $C_{10}H_{10}O_5$, and are opianic acid.

With nitric acid, the following process was adopted by the authors, as they wished to ascertain what nitrogenized by-products were formed during the reaction.

Ten Gm. of hydrastine were cautiously warmed with 50 C.c. of nitric acid (spec. grav. 1.300) and 25 C.c. of water to 50–60° C. 122°–140° F.), and kept at this temperature until a small portion tested with ammonia ceased to produce a precipitate. Care must be taken to avoid any considerable evolution of carbonic acid. After standing some time, the cold solution deposits a large amount of colorless crystals which are opianic acid. On supersaturating the filtrate with very concentrated potassa solution, a white, voluminous precipitate is produced, which soon becomes crystalline. After being dried and recrystallized from benzol or acetic ether, crystals of a new base are obtained which has been analyzed, but needs further study.

Since *opianic* acid is thus one of the decomposition products of *hydrastine*, and the same is obtained from *narcotine*, a very close relationship of these two alkaloids—one from hydrastis, the other from opium—must be suspected. It is true that the basic portion of the decomposition of narcotine, viz., cotarnine, is not identical with the base above described, yet it is so very similar that (as the authors say) it would be taken for cotarnine, were it not for the analytical results.

The relationship of hydrastine to narcotine is, however, further demonstrated by their behavior towards potassa. If powdered hydrastine is introduced into a concentrated watery solution of potassa, and heat is cautiously applied, after the water has evaporated, the hydrastine melts to a viscid mass. On removing the latter mechanically, it becomes hard on cooling, and is then is easily soluble in water. When the aqueous solution is neutralized by a diluted acid, unaltered hydrastine separates again. The same has been observed by Wœhler to occur in the case of narcotine. Another remarkable coincidence is that both alkaloids deviate the ray of polarized light to the left in chloroformic solution, but to the right in an acid aqueous solution.

If the residues left after the separation of berberine and hydrastine are strongly concentrated, acidulated with sulphuric acid, and the filtrate shaken with ether, large crystals of a faint yellow color will be obtained on evaporation. This substance may be obtained more easily by shaking the liquid extract of the root with ether before the removal of the berberine and hydrastine. On analysis, this substance proved to be free from nitrogen and neutral, and therefore not identical with the other alkaloids supposed to exist in hydrastis. So far it appears to be a substance partaking of the properties of lactones.—After *Berichte d. Deutsch. Chem. Ges.*, 1886, 2,797.

Cinchona Cultivation in Mexico.

Cinchona was first introduced in Mexico by the Emperor Maximilian in 1866, upon the advice of Mr. Maury, a scientist and lieutenant in the United States navy, who had been making a tour through the South American Andes, and was struck with the climatic similarity of those regions to certain parts of Mexico.

The Emperor Maximilian applied for cinchona seed to Mr. Markham, who had introduced the plant in the East Indies, and received from him a supply of three different species, together with instructions regarding the treatment of the seed.

By the emperor's orders, the seeds were handed to the Geographical and Statistical Society of Mexico, who, in turn, commissioned a Mr. José Apolinar Nieto, of Córdoba, to plant them, and supplied him with the necessary funds for the experiment.

About the same time that these experiments were instituted, Dr. Hugo Finck, a German resident in Mexico, received from the late Mr. Daniel Hanbury, per post, a small quantity of Cinchona Condaminea (officinalis) seed, but without any instructions as to its mode of treatment. Dr. Finck planted these seeds in the open air, under the shade of trees, with the result that a large proportion germinated, but only three seedlings survived the first season. These three plants have now matured to powerful trees, and are still flourishing.

Mr. Nieto, to whom the seeds sent by Mr. Markham had been entrusted, succeeded in raising a large number of plants, which he distributed carefully among intelligent planters. In his own garden he planted several hundred seedlings.

The plants, being treated with every care, flourished exceedingly, some of them flowering and producing good seed after the third and fourth year.

Dr. Finck, in addition to the small quantity of seed which he had received from Mr. Hanbury, procured a large number of seedlings from Mr. Nieto, and planted them, in 1870, on an estate and a farm of his in the neighborhood of Córdoba, at a height of between 1,800 and 2,000 feet above the sea-level. But the mean temperature of these plantations, 75° F., was found too warm, and the plants did not succeed, although they attained a height of thirteen to sixteen feet. In 1873, only 115 of the trees survived.

Dr. Finck, notwithstanding this disappointing result, remained a firm believer in the feasibility of successful cinchona growing in Mexico. In 1874, he made a fresh attempt, this time on a "rancho" about 2,900 feet above sea-level, and had the satisfaction to see his efforts covered with complete success, and to see other planters following his example. At present, 12,000 trees are flourishing on Dr. Finck's plantation, and it is said that the total number on the plantations around Córdoba is nearly 20,000. A great many varieties have in course of time sprung up from the original three species, and the alkaloidal percentage of the Mexican cinchona is equal to that of the best Bolivian bark.

In Mexico, cinchona grows best at an altitude of 2,900 to 3,500 feet on lightly inclining mountain slopes with a porous subsoil, such as sandstone or conglomerate. Level land, unless it be perfectly well drained, does not suit the trees; they die wherever stagnant water is found.—*Chem. and Drugg.*

Eucalyptus Honey.—At a meeting of the Academy of Medicine held on January 25th, Dr. Caraman read an interesting communication on the honey made in Tasmania by the native wild bees. A French naturalist, M. E. Guilmette, having noticed near the top of a lofty eucalyptus tree a very large hive surrounded by a sort of black bees unknown to him, cut down the tree, and thus secured nearly eight thousand pounds (3,500 kilos) of honey. In other places he obtained still larger quantities from a single hive. The bee which produced it is smaller than the European, but otherwise differs but little in its general habits. The honey has a strong flavor of eucalyptus. When given to dogs, who are very fond of it, its effect after a day or two is to cause a marked retardation of the heart's movements, and a sensible decrease of the number of pulsations. On man the action is the same. When mixed with water or milk, it forms a very palatable drink, and causes a pleasant feeling of warmth throughout the body. The voice becomes clearer and louder, and the lungs seem stronger and more elastic. Dr. Caraman concludes that eucalyptus honey would probably prove efficacious in bronchial affections, irritation of the larynx, and also in scrofulous diseases.—*Chem. and Drugg.*

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EDITORIAL.

THE practice of selling at retail is not the only cause of complaint against wholesalers and jobbers in drugs. Some of those who publish annual price-lists are said to make a patronage of their advertising pages a condition upon which they will handle the goods of manufacturers, and the charge for space is such that it not only pays the expense of the entire publication, but leaves a margin of profit, besides affording the wholesaler a free advertisement for his own wares. In the case of individuals who manufacture a single article, or a few things only, on which there is a comparatively small margin of profit, the percentage allowed to the jobber and the sum extorted for the advertisement leave him next to nothing for expenditure on other forms of advertising, so that he feels himself to be quite at the mercy of the wholesaler, and has the choice only of giving up his manufacturing or of conducting it for the benefit of the wholesaler who handles his goods. This is particularly hard on the retail pharmacist who has the skill and appliances for manufacturing some specialty in connection with his retail trade, but has not the necessary money or space for carrying a considerable stock of the article, or good facilities for introducing it to the market.

THE effect of this condition of things is calculated to prevent any considerable manufacturing on the part of retailers, and is calculated to lead them, in time, to give up the manufacture of articles regularly demanded in their own business, since the laboratories established by the wholesale dealer, whose advertising is paid for by others, enables him to make them in large quantities, and place them on the market at less cost than can be done by others. It may even become cheaper for the retailer to buy ready-made goods than to make them himself, owing to the saving that the manufacturer on a large scale may make through the use of by-products, and the possession of large and improved apparatus.

THE effort being made in Brooklyn, N. Y., to secure legislation which will include cocaine and its salts among the remedies which can only be dispensed on a physician's prescription, has led to a correspondence in the columns of a New York daily paper, which shows that no such classification of drugs exists under the laws of the State, and that there is practically little or no restraint exercised by the laws upon the sale of poisonous drugs. Few persons, it is said, who wish to buy poisons without a physician's prescription, experience any difficulty in obtaining whatever they desire, the form of giving their names and the purpose for which the poison is wanted being practically without value.

We doubt whether the existence of the laws on the subject of retailing poisons has really lessened the number of instances when they have been used for criminal purposes. The only effect has been to create more trouble for apothecaries, none of whom would knowingly sell a poison to a person whom he had the least reason to think likely to make improper use of it, whether the sale were attended with legal restrictions or otherwise.

THE PHARMACY LAW before the Pennsylvania Legislature contains a clause which will legalize "counter prescribing" and has awakened opposition on the part of the medical profession. It remains to be seen whether sufficient influence can be brought to bear upon the legislature to secure its enactment.

A PHARMACY law has passed the Nebraska Legislature. *Section* 1 creates a Board consisting of the Attorney-General, Secretary of State, Auditor, Treasurer, and Commissioner of Public Lands and Buildings, who shall appoint five examiners or secretaries who shall be skilful retail pharmacists of seven years' practical experience, and who are actually engaged in business in Nebraska. The latter assist the Board in conducting examinations, etc., and receive $5 per diem for actual service. These are selected from the nominees by the State Pharm. Assoc. Excess of receipts over expenses to be paid into State treasury, to be used in case receipts fall below expenses. *Sec.* 2 provides for organization of the Board; Secretary of Board to receive $100 per year. Defines duties of Board and times for holding examinations, etc. *Sec.* 3 provides for registration of persons in business at the time of passage of the act. *Sec.* 4 defines the qualifications to be possessed by persons who may be registered as pharmacists. *Sec.* 5 relates to the registration of assistants. *Sec.* 6 provides for annual renewal of registration; exhibition of certificate; reporting change of business location, and penalties for failure to do either. *Sec.* 7 revokes certificate when obtained fraudulently. *Sec.* 8 imposes a penalty for infringement of the law. *Sec.* 9 exempts retail dealers engaged in business not less than five miles from the nearest registered pharmacist, and registered resident physicians dispensing their own medicines. *Sec.* 10 relates to adulteration or substitution of drugs, medicines, chemicals, etc. *Sec.* 11 defines the jurisdiction of courts and mode of prosecuting infringements of the act. *Sec.* 12 exempts registered pharmacists from jury duty. *Sec.* 13 declares the act to be immediately operative.

MR. GEORGE W. SLOAN, of Indianapolis, formerly President of the Amer. Pharm. Assoc., is about to establish himself in business again and some of his numerous New York friends have taken advantage of the occasion to present him with a memorial of their affectionate regard, in the form of a complete set of weighing apparatus, made by Henry Troemner. The prescription scale with agate bearings and solid silver pans is in a case of mahogany and glass; the counter scale has a plate glass box inclosing the works which are plated with gold. Each case bears the inscription: "Presented to George W. Sloan, by his Friends in the American Pharmaceutical Association, February, 1887.

The Medical Standard is a new medical monthly of 32 pages, published by G. P. Engelhard & Co., of Chicago, (publishers of *The Western Druggist*), which commences with the February issue of this year.

The Jacksonville Price-Current and Florida Trade Journal is a weekly of 20 pages 4to, of which above 4 pages are text, 5 pages prices current, and the remainder are "ads." It is to be issued weekly, and is devoted to the interests of trade generally, and costs $1 per year.

The Chicago College of Pharmacy had its twenty-second commencement exercises in Attfield Hall, College of Pharmacy Building, on Wednesday, Feb. 23d.

The New York Microscopical Society held one of its entertaining receptions, in Lyric Hall, on the evening of March 4th, over fifty microscopes being arranged for exhibition of curious and interesting objects.

A Remarkable Salt Bed.

ONE of the most remarkable salt formations in the world is located on the isle of Petit Anse, Southwestern Louisiana, 125 miles due west of New Orleans. It is owned by the Avery family. This singular salt deposit is sufficiently unknown to bear the light of a more thorough investigation than it has had. The deposit is pure crystal salt. So far as it has been traced, there are 150 acres of unknown depth, explored 140 feet down. The surface of the bed undulates from one foot above to six below tide level. The earth covering the salt ranges from ten to twenty-three feet in depth, but one hill rises 183 feet above, showing that an after-formation took place. On the top of the salt, beneath the earth, have been found the remains of the mastodon, mammoth, sloth horse (*Equus fraternus*), tusks and bones intermixed with Indian relics, such as arrow and spear points, tomahawk heads, paint pots, mortar and pestle, and pottery of all kinds. The dip of the salt is eight degrees. There is a deposit of pink sandstone quite decomposed, a coal formation thirteen to seventeen feet thick and seventy-two per cent carbon, the lignite cropping out a hundred feet above the sea. Over the salt come pink and yellow clay beds, then the sandstone and then the clay, each stratum trending toward the north. There are also sulphur springs. The salt is a conglomerate mass of crystallizations, which in the mine look like dark salt, but when exposed to the light are seen to be white. By analysis the salt is $99\frac{88}{100}$ per cent pure, the remaining three twenty-fifths is made up of sulphate and chloride of calcium. The position of the salt shows it to be older than the coal and sandstone which lie above it, and also the mastodon and contemporary prehistoric mammals. The deposit was discovered in 1862 while a well was being excavated. It was seized by Jefferson Davis and afterwards by Admiral Farragut. It is now worked by a New York concern, which pays she Averys $5,000 per month royalty. To show the value of land here, it may be stated that a single acre, on which grow little peppers, yields a clear profit of $10,000 per year on the well-known Tobasco table sauce.—*American Naturalist.*

Fluoride of Silicon as a Poison.

SIR CHARLES A. CAMERON reports a remarkable property of fluoride of silicon, heretofore considered an innocous or indifferent gas, namely, that it possesses strong toxic properties. As this gas is liable to be given off more or less abundantly in the preparation of artificial manures and other chemical operations, the attention of physicians and sanitarians is directed to it.*

The author accounts for the death of two men who worked in an artificial manure works, on the assumption that they inhaled silicon fluoride, a gas evolved in making superphosphate of lime. He shows that the phosphate used in the works contained 6.36 per cent of calcium fluoride, and that a ton of it, if treated with a full complement of sulphuric acid, would evolve 32.78 cubic metres of silicon fluoride gas. He gives elaborate accounts of his examination of the lungs, heart, etc., of the last man killed, as he believes, by inhaling silicon fluoride, and from this examination and from the symptoms during illness, concludes that fluoride of silicon caused his death. In the lungs traces of fluorine and 0.75 Gm. of silica were found.

Experiments made with rats and guinea-pigs proved that silicon fluoride was more poisonous than carbonic oxide; 0.5 per cent rendered air rapidly fatal to a guinea-pig.—After *Chem. and Drugg.*

Burmese Gamboge.—It has long been known that different varieties of gamboge-yielding trees grow in the forests of Tenasserim and Martaban, but so far this knowledge does not appear to have been put to commercial use. In 1875, Mr. Whittall, of the Indian Forest Department, drew attention to three different species of trees, belonging to the genus *Garcinia*, growing in Southern Tenasserim, and known to the natives as *Tawmengoot*, *Parawah*, and *Parajay*. The *Parawah* yields an exudation of a white color, which changes to a reddish-yellow on exposure to the atmosphere, and is scarcely at all soluble in water, but yields to alcohol. The *Parajay* yields a rather copious exudation which, when dissolved in spirits of turpentine, affords a beautiful permanent yellow varnish for metallic surfaces, and on this accout has been called the "gamboge tree," as well as the "yellow varnish tree," but its exudation does not form an emulsion with water, and Mr. Whittall, therefore, considers it had no claim to be considered a real gamboge tree. The *Tawmengoot* was, in Mr. Whittall's opinion, the gamboge tree of the South Tenasserim forests. He says:—"The gum resin is larger in quantity and darker, and of a more glossy color than the others; neither wet nor dry is it so sticky, and so readily does it form an emulsion with water that the exudation on the outer bark is completely washed away by the rains." Samples of the gamboge yielded by the three varieties have been sent to Calcutta for valuation. That of the Tawmengoot was found to yield a good paint, but the other varieties did not answer well. It appears that in Burmah the cost of collecting gamboge is at present too high to admit of a remunerative export business.—*Chem. and Drugg.*

Monobromsalol.—A derivative of salol, or salicylate of phenyl, has been studied by Dr. Hugo Eckenroth, of Ludwigshafen on the Rhine.

When salol in alcoholic solution is mixed in with bromine water, a white precipitate of bromsalol is produced. This is, however, not a good method of preparing this body, as the bromine water also precipitates undecomposed salol. A better method is the following:

Dissolve about 10 Gm. of salol in about 60 C.c. of absolute alcohol, and very gradually add to the solution drops of bromine, waiting each time until the yellow tint of the liquid has entirely disappeared. This is continued until finally the yellow tint remains. After about ten hours, the solution will again become colorless and a considerable amount of the new compound will have crystallized out. These crystals are collected, drained, washed with a little alcohol, and twice recrystallized from alcohol. The product is *monobromsalol*, forming white, silky needles, insoluble in water, difficulty soluble in cold, but easily soluble in hot alcohol and ether.—After *Arch. d. Pharm.* 1886, 930.

Note of Ed. Am. Dr.—This compound has been prepared for the use of a physiologist of this city, who will eventually report on it.

Trinidad Lime Juice.—A large quantity of lime juice has been exported from Trinidad in recent years. The simple juice finds a market in America and the condensed juice in England. A tree yields on an average about ten gallons of juice. The limes are allowed to drop off, and then passed first through the cutter, which rips them open, and next through rollers and a press to separate the juice. These cutters, rollers, and press are constructed in a very primitive way, and admit of great improvement. The juice is then exported either as it is or condensed by boiling. A barrel of limes yields seven gallons of juice. The cost of producing lime juice, including packages, should not exceed 6*d.* per gallon. The essential oil of limes is extracted from the rind before crushing, by grating on rasps with the hands; the oil thus extracted is called hand-made oil. A hundred gallons of juice will yield by distillation about three quarts of the essential oil.—*Chem. and Drugg.*

Solution of Carmine.—A superior solution of carmine, which must *not be used*, however, for solids or liquids to be taken *internally*, is prepared, according to P. G. Unna, in the following manner:

Dissolve 1 part of carmine in 10 parts of water of ammonia, add 10 parts of water, triturate well, and filter. Pass the filtrate through the filter once a day for several days and expose it to the air to evaporate the ammonia. Then add to it enough concentrated solution of picric acid to cause all ammoniacal odor to disappear, and finally sterilize the liquid by saturating it with chloroform.

Thalline Sulphate as a Remedy in Gonorrhœa.—Dr. E. Kreis has ascertained that thalline sulphate, even in dilute ($\frac{1}{4}$ to $\frac{1}{2}$%) solution is a rapid destroyer of the gonococcus. Prof. Gohl has utilized this observation in practice, and has found that the treatment of most cases of gonorrhœa may be very materially hastened by injections of solutions of thalline sulphate. It is recommended that the first injection of about $\frac{1}{2}$ fl. oz. be allowed to run out, and that a second one be then immediately injected as far back as possible.

The results so far reported are very favorable.

False Jequirity Seeds.—Messrs. Heckel and Schlagdenhauffen report having received an invoice of jequirity seeds (from *Abrus precatorius* L.) direct from India, in which they discovered an admixture with the seeds of *Adenanthera pavonina* L., belonging to the same family. These seeds are thick, nearly lenticular, of a bright scarlet color, and have a circular ring around the centre. They were evidently present only by accident.

A Wooden Tank, capable of holding nitric or sulphuric acids, may be made by covering the inside with paraffin. Cover the inside with paraffin and then go over the surface with a sad-iron heated to the temperature used for ironing clothes. Melt the paraffin under the iron so as drive it into the wood as much as possible, then with a cooler iron, melt on a coat thick enough to completely cover the wood.—*Sanitary Plumber.*

Cement for Celluloid may be made by dissolving 1 part of shellac dissolved in one part of spirit of camphor, 3 to 4 parts of 90% alcohol. The cement must be applied warm and the fragments held firmly in place until the solvent has evaporated.—*Sanitary Plumber.*

The Swiss Cross is the name of a new monthly magazine, of 40 pages, published in New York under the auspices of the Agassiz Association. Much of the material contained in the first number is taken from *Science*. N. D. C. Hodges, 47 Lafayette Place, is the publisher. Price $1.50 per year, or $1.00 to members of the A. A.

* "The Toxicity of Silicon Fluoride." By Sir Charles A. Cameron, M.D. Reprint from the *Dublin Journal of Medicine*, January, 1887.

Prof. Wm. Saunders, of London, Ont., has been appointed director of the Experimental Farm Stations of Canada, his jurisdiction extending over the stations in all parts of the Dominion, under the direction of Hon. Mr. Carling, Minister of Agriculture. Mr. Saunders has been visiting institutions of a similar character in the United States, and also in England in charge of the Canadian fruit display at the Colonial and Indian Exhibition, and since his return has undertaken several experiments in the shipment of early varieties of fruits and vegetables in refrigerators with success. Mr. Saunders is singularly well qualified for the position, having been for years president of the Ontario Fruit Growers' Association, a position which he held by reason of his superior knowledge of all that appertains to the cultivation of fruit. He is recognized as one of the leading pharmacists of the Dominion, and was at one time one of the chief officers of the American Association for the Advancement of Science. As an entomologist he has few superiors, and by virtue of that qualification eminently fitted for this extended field of usefulnsss.—*Western Druggist.*

Dr. Louis Mialhe, recently deceased, was at one time a pharmacist and a writer of some fame. Born in 1807, at Vabre (Tarn), in Southern France, he graduated with honors in 1833 at the Paris School of Pharmacy, and in 1838 obtained the diploma of Doctor of Medicine, but pharmacy always remained his preferred science. A professor of pharmacology at the Paris School of Medicine from 1842 to 1848, Dr. Mialhe was in 1867 elected a member of the Academy of Medicine in the section of pharmacy. He contributed many scientific papers to the medical and pharmaceutical periodicals. His most important works were the following: "Traité de l'art de formuler" (1845); "Recherches sur les purgatifs" (1848); "De l'albumine (1852); "Chimie appliquée à la physiologie et à la thérapeutique" (1855); "De la pepsine" (1860); "Destruction des acides organiques dans l'économie" (1886). All the foregoing are octavos of good size, and some have been translated into foreign languages. Dr. Mialhe was a knight of the Legion of Honor, but in compliance with his express wishes, the military honors due to this dignity were not rendered at the funeral.—*Chem. and Drug.*

Chalk Ointment made with equal parts of precipitated carbonate of lime, or prepared chalk and lard, with the addition of half a drachm of pure carbolic acid to each ounce, is much used in St. Bartholomew's Hospital as an application to erysipelas. The lard should be previously melted to facilitate combination.—*Practitioner.*

Compressed coffee has been recently introduced, and bids fair to become a lasting success, as it is extremely portable, attractively packed, and retains for a very considerable period all the aroma and strength of the freshly-ground article. It is the invention of Mr. Otto E. Webber, of Dresden and Berlin, who also makes a specialty of compressed tea, which is another useful adjunct to ship's stores and for travellers.—*Conf. Jour.*

Faith-Cures by Water.—St. Petersburgh society has been somewhat interested in a medicinal water discovered by a Baron Vrevsky, and stated to effect marvellous cures. Owing to an official permission to continue the use of this water being being necessary, the medical committee of St. Petersburg caused it to be analyzed; and the result of this analysis, according to the *Official Messenger*, is to show that this famous and universal remedy is absolutely identical with the water of the Neva.

"Blood Writing."—Rub red iodide of mercury on the surface of a sheet of note paper with a piece of cork. Take the paper so prepared and hold it over the flame of a candle or lamp, slowly moving it to prevent burning. The red color will quickly disappear. Anything now written or drawn on the paper with a pointed piece of wood will appear as if written in blood.—*Chem. and Druggist.*

Medical Dispensing.—Speaking of dispensing as performed by "unqualified" assistants in the offices of medical men in England, a writer in the *British Medical Journal* says: "Breaking the neck of the liquor strychnine bottle, they pour the drug into another, in which had previously been kept chloroform water, and finding it too much trouble to scrape off that label, they stick the liquor strychnine label on the chloroform water label, which, being naturally dry, absorbs the liquid gum from the other, causing it in a few days to drop off, leaving the liquor strychnine labelled chloroform water, which will now be used as such."

To Write on Steel.—Dissolve powdered sulphate of copper in a small quantity of water; rub the surface of the steel over with a piece of wetted soap, so as to cover it with a thin coating; then dip the point of a pencil into the solution, and with it write or draw the required design on the steel. After a few minutes wash, and the steel will be found to be beautifully and permanently engraved.—*Chem. and Druggist.*

CORRESPONDENCE.

Correction.

EDITOR OF AMERICAN DRUGGIST:—In your issue of January, page 14, under *Injectio Morphinæ Hypodermica, Magendie*, you made a mistake in the strength. Please correct this. It should be eight times stronger.

I also call your attention to an error in the United States Dispensatory [15th ed.], page 124, where the dose of aconitine is given as "one-fifth of a milligramme ($\frac{1}{5\frac{1}{3}}$ of a *gramme*)." This should be $\frac{1}{5\frac{1}{3}}$ of a *grain*.

SCRANTON, PA. CH. KOEMPEL.

We are much obliged to our correspondent for pointing out the error. Of course, the water in the Magendie formula should read 1 fl. ℥, instead of 1 fl. ʒ. This is another instance which may be quoted in favor of abandoning the drachm and ounce sign altogether. When the hospital formulary was about to be printed, it was contemplated to replace these signs by the abbreviations "dr." and "oz." But, as it happened that a special, very distinctive font of apothecaries' signs was placed at the disposal of the printer who printed the original edition, the old method was maintained. The apothecaries' signs in the ordinary fonts available in printing establishments are often very poor, and it will be our aim to bring about some improvement in this matter, if possible.

Opium Assay.

To the Editor of The American Druggist.

DEAR SIR:—I have just received, through the kindness of a friend, a slip cut from the Jan. number of your JOURNAL and containing the correspondence of Mr. Conroy and Messrs. Braithwaite and Farr. Mr. Conroy appears to be very much incensed because we were so bold as to question a statement of his that was unaccompanied by experimental evidence.

The paper referred to by him was not undertaken, as Mr. Conroy seems to think, for the sole purpose of criticising him. On the contrary, it is not improbable that, if he had accompanied his original statement with a full account of his experiments, we would have acccepted it without question. The experimental work reported in our paper was performed by Mr. Meinert, under my instruction, and I have every reason to believe it was done conscientiously and carefully. As we are nearly three thousand miles apart, I cannot consult him before writing. I regret that I have no facilities here for doing so, or I should be glad to perform Mr. Conroy's "simple experiment" for his gratification, but should want more explicit instructions than to dissolve 2.5 grammes of solid extract "*equal in consistence to good new opium*" in 50 C.c. of water. Mr. Conroy contends "that it is quite impossible to expel the whole of the moisture from the marc by drying at 100° C." That, of course, is a mere assertion which may or may not be true.

The seeming inconsistency pointed out by Messrs. Braithwaite and Farr was noticed by us before the paper was read; but the several experiments (with moist opium) seemed to agree among themselves, and the results were given as obtained.

In conclusion, I take the liberty of repeating what was said (in substance) in our former communication, that if an important change is to be made in the pharmacopœial process for the assay of opium, that change should not be based upon one experiment, especially when that experiment itself is founded entirely upon so general a statement as "that opium yields on an average 50 per cent of solid extract, equal in consistence to good new opium," but upon the result of a large number of experiments.

Very truly,
T. J. WRAMPELMEIER.

SAN DIEGO, CALIFORNIA, Feb. 12th, 1887.

Miss Klumpke, who recently was successful in passing the examinations for position as *interne* in the Paris hospitals, is the first woman who has succeeded in the *concours* for the place. In the written examination, she ranked second (*ex æquo* with one or two others). She obtained twenty-seven marks out of a possible maximum of thirty, the highest number reached being twenty-eight. She has already been known by her work in the domain of neuro-pathology, and her success has caused no little grumbling among the male students, who dislike being distanced by a woman.—*Nature.* [Miss Klumpke is a resident of Boston, Mass.]

Bismuth to Prevent the Formation of Fusel Oil.—Messrs. Gayon and Dupetit, at the last sitting of the Academy of Sciences, presented a paper describing a method for preventing during the production of alcohol the secondary fermentation to which is due the formation of the higher alcohols so detrimental to the public health. They use for this purpose various bismuth salts, whose addition to the fermenting liquor causes, they claim, pure, ethylic alcohol only to be generated, to the total exclusion of its more complicated congeners.—*Chem. and Drug.*, Nov. 13th, 1886.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,874.—**Detection of Mercury in Urine** (Medicus B.).

"Kindly answer: What simple and reliable method of examining urine for the detection of excreted mercury may be employed by the busy practitioner? The amalgamating and electrolytic processes are too complicated, and that of Mayençon and Bergeret (in 'Neubauer and Vogel') is pronounced unrealible."

We regret to say that there is no short road to the discovery of mercury in urine. You are probably aware that mercury as well as lead enter into peculiar insoluble compounds, in the circulation, the nature of which is not yet properly understood. This much, however, is certain, that they are not eliminated from the system, at least in any noticeable quantity, until some substance is accidentally or intentionally ingested, which is capable of making a soluble double salt with the mercury, and thereby carry it out through the kidneys, and possibly also by other channels. The most efficient agent for accomplishing this, in the case of mercury as well as lead, is *iodine*, in the form of iodide of potassium, or sodium, or some other alkali iodide. It is known, however, that some time must elapse (according to some authorities, not less than three weeks) after the treatment has commenced before any of the metal will make its appearance in the urine. This applies, however, only to such cases where the mercurial infection is old and of long standing. When such salts as the biniodide of mercury have been taken, or other soluble double salts of mercury, the latter metal will appear in the urine almost simultaneously with the iodide, but, so far as known, it does not appear to be eliminated as fast as it is ingested. In other words, a certain proportion is retained and is only gradually displaced by a pure iodide treatment.

These remarks having been premised, we would say that Mayençon and Bergeret's method has indeed been dropped by Neubauer [not Neugenbauer, as it is often misspelled] and Vogel in their latest edition.

Though our correspondent declares the electrolytic methods too complicated for the busy practitioner, yet we think that, with a little practice, one or the other of these could be made to work very expeditiously. The next best method, then, would be a "galvanic" one, or rather the amalgamation process. If copper, brass, gold, etc., are immersed in an acidulated solution containing mercury, the latter will be deposited upon the former in a metallic state. Applied to the urine, this is performed as follows:

Digest a considerable quantity of the urine, say at least 8 fl. oz., previously acidulated with a little hydrochloric acid, with a little fine leaf brass or gold, during 5 to 10 minutes, at a temperature between 150° and 170° F. (Gold leaf, such as is used for gilding, is not suitable, as it is too thin and unsubstantial. To be of proper thickness, it should be like tinsel.) The bunch of metallic leaf is then removed, and successively washed with boiling water, alcohol, and ether. All the mercury which was in the urine is now deposited upon the brass or gold. A small glass-tube about 3 or 4 inch. long, and $\frac{3}{16}$ inch. bore, is now drawn out at one end to a narrow capillary tube (of which all but about two inches is to be cut off). The amalgamated bunch of metal is pushed into the bottom of the wide tube, and the latter also drawn out at the other end. At either end there will then be a capillary tube about two inches in length, and in the centre a section of the original tubing, likewise about two inches long. The central portion of the tube is now heated while being held in a horizontal position and constantly turned, to not more than a just *incipient* dull red heat. The flame should extend over the whole central portion.

If gold foil was used, only mercury will distil off, and collect as a more or less black ring in the capillaries. If brass foil had been used, some zinc will distil over likewise, but this does not volatilize as far as the mercury. When the tube is cold, a little iodine is pushed into the orifice of one of the capillaries, and while it is held somewhat oblique, the iodine is volatilized so as to fill the interior and pass out at the other capillary. The iodine will thus convert any metallic mercury into red biniodide, even traces of which are readily recognizable.

This method may appear tedious, but if it has been once or twice performed, best on urine containing a known quantity of mercury, it will be found quite easy of execution.

No. 1,875.—**Rubber Adhesive Plaster** (H. S.).

Request the formula of a rubber adhesive plaster similar to those now in the market, and spread into rolls of different width.

That it is about time for devising a formula for such plasters, with a view to their eventual introduction into the U. S. Pharmacopœia, there is no doubt. So far, however, it appears that every one who has successfully devised a plaster mass of the kind alluded to, utilized the same for his private benefit rather than for the public weal. And we cannot blame him. For the experiments that may have preceded his success have probably been costly. At present we have only some very general and indefinite conception about the composition and *preparation* of the mass. We are tolerably certain that there is a good deal of balata, or gum chicle, among the constituents. As to the rest, we have no definite knowledge.

Even if the composition of these plasters should become fully known, it is very doubtful whether it would pay to prepare the mass extempore or for use on a small scale. Very likely it would require special apparatus to get some of the ingredients into a suitable condition, and consequently a successful preparation of *handsome* and "attractive" plasters is likely to remain in the hands of large manufacturers.

No. 1,876.—**Gerhardt's Centrifuge.**

We have had a number of inquiries so far, regarding Gerhardt's Centrifugal Apparatus, illustrated in our August number of 1886, page 145. The present correspondent wants us to state the price, etc. This we are unable to do, as we have never directly corresponded with the maker, whose apparatus we have illustrated for its intrinsic merits and not by request. Our correspondent can easily ascertain the cost by inquiring through his wholesale drug house, or through importers of apparatus (see our advertisements), or by addressing C. Gerhardt, Manufacturer of Apparatus, Bonn.

No. 1,877.—**Characteristics of Cider Vinegar** (W. M.).

A practical and useful synopsis of what can be said on the subject of cider vinegar, as distinguished from acetic acid or from white wine vinegar, is contained in the following, which is an extract from a paper by Dr. B. F. Davenport, late Vinegar Inspector for Boston, written for the New England *Grocer*:

There are certain characteristics peculiar to the residue of a pure cider vinegar, the principal of which are the following: It will be about three per cent in weight, and never less than two per cent. It is always soft, viscid, of apple flavor, somewhat acid and astringent in taste. A drop of it taken up in a clean loop of platinum or of iron wire and ignited in a colorless Bunsen gas lamp flame, imparts to it the pale lilac color of a pure potash salt, without any yellow due to sodium being visible. The ignited residue left in the loop of wire will be a fusible bead of quite a good size, and it will leave a strong alkaline reaction upon moistened test paper, effervescing briskly when immersed in an acid. The presence in a vinegar of the *slightest* trace of any free mineral acid will prevent the ignited residue having any alkaline reaction, or effervescing with acids. The presence of any practical amount of commercial acetic acid added, to "tone up" the strength of the vinegar, will cause the igniting residue to impart another color to the Bunsen flame, and the residue itself will have a smoky, pyroligneous taste or odor. Any corn glucose used in the vinegar will cause its residue when ignited to emit the characteristic odor of burning corn; and as the last spark glows through the carbonized mass, to usually emit the familiar garlic odor of arsenic. For the common oil of vitriol usually used in the production of glucose is now mostly derived from pyrites, which almost always contain arsenic. A glucose vinegar which has been made without vaporizing the alcohol after the fermentation of the glucose will also have a strong reducing action upon a copper salt in an alkaline solution, and also will give a heavy precipitation of lime with ammonium oxalate. A true malt vinegar always contains phosphates, and a wine vinegar cream of tartar. The presence of any acrid vegetable substance in a vinegar is known by the residue having a pungent taste, especially if before the evaporation the vinegar has been exactly neutralized with soda.

In a pure apple cider vinegar, hydrogen sulphide gas will not cause any discoloration, nor will the addition of a solution of either barium nitrate, silver nitrate, or ammonium oxalate cause anything more than the *very slightest* perceptible turbidity. But the addition of some solution of lead acetate—that is, of sugar of lead—will cause an immediate voluminous and flocculent precipitation, which will all settle out in about ten minutes, leaving a clear fluid above. In most of the so-called "apple vinegars" brought into this market from other States, the addition of some of this lead solution will cause but a slight turbidity, without any precipitate settling out for several hours, and even then the precipitate will not be of the same appearance as in apple cider vinegar.

Sophistications of cider vinegar that will not be detected by some one or more of the above-given tests are not likely to be met with, for the simple reason that they are not profitable. To translate percentages of acid strength into the old commercial terms of grains of soda bicarbonate per troy ounce, the per cent may be multiplied by 6.72; or, vice versa, divide the grains by the same factor. To reduce it into grains of potash bicarbonate, 8 would be the factor to be used in like manner.

No. 1,878.—**Rubber and Acetic Acid** (U. S.).

Ordinary officinal acetic acid, in the cold, does not attack rubber to a noticeable degree, so far as we have observed. What a very long contact would do we cannot say, as we would have to make an experiment on purpose to ascertain it. But *hot* acetic acid is quite destructive of rubber. We would suggest to our correspondent to start a series of experiments to determine the effect of the cold acid upon elastic rubber as follows: Put some freshly made elastic rubber bands in a series of twenty-four vials, add to each the kind of acetic acid to be experimented with, cork and label them (with date) and set them aside, one set of twelve in a cool place, the other in a moderately warm place. After a certain time (say four months), take one sample of each series and compare the condition of the rubber. After another month, do the same, and so forth. Finally, do not forget to favor us with the results likewise.

No. 1,879.—**Syrup of Iodine of Iron and Quinine** (P. & Co.).

I. Bouchardat's formula for this syrup is as follows:

I. Iodine	5 parts
Iron, in powder	2 "
Syrup	1120 "
Sulphate of quinine	1 part
Diluted sulphuric acid	q. s.
Distilled water	q. s.

Digest the iodine, iron, and 20 parts of the water until the red-brown color of the iodine has disappeared. Filter through a small filter into the syrup. Then dissolve the sulphate of quinine in 10 parts of water with the aid of diluted sulphuric acid and mix this solution with the previously prepared syrup.

As will be seen, this syrup contains only a minute quantity of quinine, and as to iodide of iron, it does not contain quite two per cent; that is, it is less than one-fifth of the strength of that of the U. S. Ph.

It is impossible to combine much quinine with syrup of iodide of iron, either as hydro-iodide already formed, or as sulphate. The quinine salt must be kept in solution by an acid. Among the acids there is one, viz., hypophosphorous, which not only leaves the iodide of iron unaffected, but even seems to protect it against change. Hence, the following formula, which we have several times employed *extempore*, will probably produce a more desirable preparation:

II. Sulphate of quinine	10 grs.
Hypophosphorous acid	q. s.
Iodide of potassium	4 gr.
Syrup	enough to make 4 fl. oz.
Syrup of iodide of iron (U. S.)	4 fl. oz.

To the sulphate of quinine add about 5 minims of commercial solution of hypophosphorous acid and then a little syrup. When the quinine salt is dissolved, add the remainder of the syrup and afterwards the iodide of potassium dissolved in a few drops of water. Mix well. Now add the syrup of iodide of iron and mix. Should any cloudiness appear, clear it up by a few drops of the hypophosphorous acid.

A fluidrachm of this syrup contains about 4 grains of dry iodide of iron and about 6 grains of hydriodide of quinine.

No. 1,880.—**Gas-Proof Cement** (J. E. L.).

"Please give me the formula for a good gas-proof, flexible cement."

A "flexible" cement that is impervious to gas can probably be prepared only with the aid of india rubber. It will depend very much upon the degree of flexibility which the cemented part is required to possess. If it is to be very flexible, probably a solution of pure india rubber (cut into very thin slices) in benzol or oil of turpentine or chloroform will answer. For most purposes, however, marine glue will probably be the best. This is made by melting together shellac and caoutchouc in suitable proportions; the more of the former is added, the harder will be the cement. The following is the modus operandi:

India rubber, cut into fine shreds or thin slices, 1 oz. Digest this in a closed bottle, in a water-bath, with about 12 parts of coal-tar naphtha or benzol, agitating frequently until dissolved. Then add powdered shellac, in quantity from 2 to 12 parts or more, according to the degree of hardness desired in the cement. If it is to remain flexible, of course a small quantity will suffice, but we cannot specify it, as we do not know the purpose to which it is to be applied. Continue the heat until it is perfectly liquid and the benzol has been to a large extent dissipated. Then pour it out upon clean metal or a marble slab so as to form thin sheets. When it is required for use, heat a sufficient quantity carefully until it melts, and apply it to the object, which should previously be suitably heated. As marine glue is easily spoiled or burnt by being overheated, it is always best to soften it in a capsule over a water-bath. The capsule is then wiped dry and carefully heated on a wire-gauze over a Bunsen flame.

No. 1,881.—**Percolators** (M. E. B.).

This subscriber asks us to give information where he may obtain percolators in which either heat or pressure is used for expediting the process.

We presume that the water-bath percolator devised by Mr. B. Fenner, of Westfield, N. Y., is the only one on the market which combines heat with the process of percolation itself. We have illustrated the apparatus in this journal (NEW REMEDIES, 1882, 180, where we have inadvertently spelled Mr. Fenner's name wrong). Of pressure percolators we have illustrated that of S. J. Hinsdale (of Fayetteville, N. C.), in NEW REM., 1883, 9; and that of N. Rosenwasser (112 Superior street, Cleveland, O.), in NEW REM., 1881, 357; and 1882, 262. By communicating with the above named, our correspondent will no doubt obtain full information.

No. 1,882.—**"Smuggled High Wines"** (M. E. B.).

"What are the 'high wines' that come from Canada, and are smuggled over all along our northern frontier? etc."

As to "high wines," if there *are* any smuggled over from Canada, I presume they are the same thing as the "high wines" of the United States. These are simply crude alcohol as obtained in the first distillation. This alcohol still contains fusel oil and aromatic substances derived from the source from which it was made. It is used by itself for many technical purposes, chiefly, however, for making artificial liquors, fortifying wines, etc. Pure alcohol is made from it by rectification. Of course, it would not do for making medicinal preparations.

As to the smuggling of high wines from Canada, we confess that we have no knowledge. According to the statement of our correspondent, it would seem as if this were a common occurrence all along the frontier. But we are inclined to doubt this, and believe our correspondent has been deceived. That attempts are now and then made to evade Uncle Sam's exacting tariff we have no doubt, but a continued systematic evasion of the lynx-eyed custom officers is not very probable.

No. 1,883.—**Syrup of Calcium Hypophosphite** (S. D. S.).

"In making syrup of calcium hypophosphite according to Procter's formula in Parrish's Pharmacy, I have much difficulty in dissolving all the salt in the quantity of water directed in the formula. The directions say 'use hot water,' although the salt is more soluble in cold."

Our correspondent is quite correct in stating that hypophosphite of calcium is more soluble in cold water than in hot; though, perhaps, it would be more correct still to say that the action of heat, when continued, particularly in presence of sugar, has a tendency to produce insoluble phosphate of calcium. There are some points connected with the hypophosphites, particularly that of calcium, which need clearing up, and this is just one of those about which our knowledge is fragmentary. It is now well recognized by all manufacturers who have much occasion to handle this salt that, in order to get the whole of it into solution, it is necessary to use a small quantity of an acid. Hypophosphorous acid was formerly usually recommended for this purpose, probably for the theoretical reason that it was supposed to be more in harmony with the therapeutic objects for which the salt is administered. But there is so little of the lime salt absorbed at any one time, from any single dose taken internally, that the small amount of acid used to keep the salt in solution is of no significance whatever. Hence any other acid which does not form an insoluble salt with calcium may be used.

The U. S. Ph. uses citric acid. Some manufacturers use hydrochloric acid. We advise, therefore, to modify the process as follows:

Hypophosphite of Calcium	1 ʒ
Sugar	12 ʒ
Water	9½ fl. ʒ
Tinct. Vanilla	q. s.
Citric Acid	q. s.

Dissolve the salt in the water, cold. If there is any insoluble residue left, allow the solution to settle, pour off the clear liquid as much as possible, then add to the residue enough citric acid to dissolve it. (Or, hydrochloric acid may be used.) Next, add the sugar, dissolve by agitation, and lastly add the vanilla.

No. 1,884.—**Antifebrin** (Pharmacy).

This new antipyretic is gradually gaining ground, and will, no doubt, make serious inroads into the consumption of other antipyretics. It has been used with good results in the public hospitals of New York, though antipyrine and similar agents are likewise used as yet. It seems that the sphere of general usefulness of these two agents is about alike so far as a reduction of bodily temperature is concerned, but each of them has some special advantages in certain directions. For instance, antifebrin is said to be an efficient agent in diminishing the intensity and fre-

quency of epileptic attacks, but this requires more continued study.

We have published all that was supposed to be of importance regarding the chemical nature and properties of antifebrin, and will only add here a short recapitulation, with a few additional remarks.

Antifebrin—or by its true chemical name: *acetanilide*—when crystallized from water, is in form of colorless and odorless scales or rhombic plates, of a somewhat fatty feel and a silky lustre. Upon the tongue it produces a slightly burning sensation. It is not very soluble in water, 1 part requiring 189 parts of water at 43° F. It is much more soluble in hot water and in alcoholic liquids, very easily in alcohol or ether. When heated to 234° F., it melts to a clear colorless liquid, and at 563° F. it boils without decomposition. Acetanilide is neutral to test-paper and very resisting to reagents. But by long-continued boiling with hydrochloric acid, or with solution of potassa, it can be decomposed into its components, viz.: aniline and acetic acid.

The identity of acetanilide (antifebrin) may be established by heating it with an equal quantity of chloride of zinc, whereby a handsome coloring matter of a moss-green fluorescence is formed, which may be dissolved by heating with very dilute hydrochloric acid. The colored product thus obtained is the so-called flavaniline of Fischer and Rudolph.

The following reactions have so far been recommended as the most suitable for testing its purity.

Antifebrin should be odorless and indifferent to blue litmus paper (a reddening would point to free acetic acid). It should melt to a colorless liquid at 234° F. (For this test the substance should previously be well dried, as the least contamination with moisture materially lowers the melting point.) It should boil without decomposition at 563° F., and when ignited upon platinum should leave no residue. On heating 1 Gm. of antifebrin with 50 Gm. of water, a clear colorless liquid should be formed. Any turbidity which might here make its appearance might be due to free aniline, but this would be revealed already by its odor.

No. 1,885.—**Compound Syrup of Phosphates** (M. M.).

The improved process you inquire about is probably that lately proposed by D. S. Sager in the *Canadian Pharm. Journal*. As to its superiority over others, we have no personal experience so far, but expect to have an opportunity of ascertaining for ourselves. Meanwhile we publish the method in abstract:

Sulphate of Iron	1,021 gr.
Phosphate of Sodium	1,021 gr.
Acetate of Sodium	328 gr.
Carbonate of Calcium	1,247 gr.
Phosphoric Acid (50%)	10 av. oz.
Carbonate of Sodium	54 gr.
Carbonate of Potassium	72 gr.
Water	a suff. quant.
Sugar	42 av. oz.
Orange Flower Water	2 fl. oz.

Dissolve the Phosphate and Acetate of Sodium in a sufficient quantity of water; also the Sulphate of Iron in a separate portion of water. Mix the two Solutions, wash the resulting precipitate on a strainer, or, if working with small quantities, on a filter. (The amount of ferrous phosphate thus produced would weigh 511 grains, if dry.) Dissolve the still moist magma in 2 fl. oz. of phosphoric acid [thus it is printed in the author's paper; he does not specify what kind of phosphoric acid; we presume he means that of the Brit. Pharm., which has the spec. grav. 1.500. As this kind of acid is not usually kept in stock, we think it would answer the same purpose to use a small amount of water and enough 50% phosphoric acid to dissolve the salt].

Next dissolve the Carbonate of Calcium in 14 fl. oz. of water with the aid of 9½ av. oz. of phosphoric acid (50%), using heat. Set this solution aside.

Also dissolve the Carbonate of Sodium and Potassium in 1 fl. oz. of water with the aid of ½ av. oz. of phosphoric acid.

Mix the three solutions in the order named, viz., the ferrous phosphate solution with the phosphate of calcium solution, and then add the last. Finally, add enough water to make altogether 28 fl. oz. If necessary, heat the solution gently to clear it; then filter.

Dissolve the sugar without heat, if possible, in the filtrate, and add whatever flavor is desired, usually 2 fl. oz. of orange-flower water, or enough tincture of vanilla. The coloring matter is to be added last, and best in solution.

This syrup has a pleasant acid taste, does not candy, and has the spec. grav. 1.370.

No. 1,886.—**Buchinha** (Dr. P.).

This is the name of a Brazilian drug which has long been in use there as a drastic purgative. It is derived from *Momordica operculata* L. (Luffa operculata Cogn.), natural family Cucurbitaceæ. The active principle is not contained, as in the case of the other members of this family, in the parenchymatous fundamental tissue, but in the network formed by the vascular bundles. The fruit cannot be used medicinally until the epidermis and the parenchyma have been removed, which is probably accomplished by means of water. It is 1¼ to 2¾ inches long and has the form of a plum.

In the network of vascular bundles, two portions may be distinguished,-viz., an external portion, consisting chiefly of horizontal strands forming large meshes, and an inner one, in which the strands are closer together and more vertical. Between the bundles, which form the dissepiments of the fruit, the tender-walled parenchyma is still partly preserved.

The seeds are about ⅝ inch long, $\frac{3}{16}$ broad, flat, of grayish-brown color, with black spots, and having two ridges on either side near the pointed end.

The taste of the drug (fruit, minus epidermis and parenchyma) is intensely bitter, recalling the taste of colocynth. The microscope reveals a dry substance adhering mostly to the outside of the parenchyma cells of the dissepiments. This dry substance is insoluble in water, but soluble in alcohol, and perhaps constitutes the active ingredient.

The plant is described by De Candolle ("Prodromus," III., 311), Martius, and others. It has been figured by Commelyn ("Plant. rar.," tab. 22). Notices on its uses will be found in various authors, for instance, in Langgaard's "Novo Formularia," in Chernowiz's well-known formulary, and others. A rare pamphlet published at Rio de Janeiro in 1836* gives the name "Bucha de Paulista" or "Purga de Jão Paes" to *Momordica operculata* L., and the name *Buchinha* to *Momordica purgans* L.

The drug is being experimented with in Europe, and samples have reached this country. Unless it has some very special advantages over other drastic purgatives, it is doubtful whether the long list of the latter should be still further increased.

No. 1,887.—**Composition of Natural Gas** (Alleghany).

Natural gas has been analyzed quite frequently. It is a mixture of various gases in varying proportions, according to the locality. The following are the constituents so far determined, with their highest and lowest amounts:

Carbonic Acid, CO_2	2.28 —	0	per cent.
Carbonic Oxide, CO	1.00 —	0	"
Hydrogen, H	35.92 —	4.79	"
Marsh Gas, CH_4,	89.65 —	49.58	"
Ethane, C_2H_6	18.12 —	3.60	"
Propane, C_3H_8	trace —	0	"
Nitrogen, N	23.41 —	0	"
Oxygen, N	2.10 —	0	"
Olefiant Gas,†	0.98 —	0	"

The proportion, by weight, of carbon to hydrogen in the gas varies between 3.08 to 1, and 2.59 to 1.

No. 1,888.—**Manufacture of Saccharin** (Several Readers).

It is expected that *saccharin*, of which so much noise is made at present, will be put on the market, in any desired quantity, by about May 1st, 1887.

The company which has undertaken the manufacture has established very extensive works, and has at its disposal a large capital. The inventors and others who are interested in the subject have refused to comply with the requests or suggestions made by chemists and the professional press generally, viz., that the name *saccharin*, which has long been used in chemistry to denote a certain derivative of sugar, should *not* be applied to the new substance, but that a new name should be devised. Consequently, there will be no other choice left but to comply with the notion of the proprietors and to continue to call it *saccharin*.

According to the German patent specifications, the substance is manufactured in the following manner:

Toluol is sulphurized by treatment with ordinary concentrated oil of vitriol at a temperature not exceeding 100° C. The resulting toluol-sulpho-acids are converted first into calcium and then into sodium salts. The latter are mixed with phosphorus trichloride and a current of chlorine gas conducted over the mixture which is constantly stirred. When the decomposition is completed, the resulting oxychloride of phosphorus is distilled off, and the mixture of the residuary chlorides strongly cooled. Paratoluol-sulpho-chloride crystallizes out, while the ortho-chloride remains liquid and is separated by centrifugal machines, etc. The ortho-chloride is now converted into ortho-toluol-sulphamide by passing over it a current of dry ammonia or by treating it with ammonium carbonate. Any chloride of ammonium formed at the same time is removed by washing with water. The washed ortho-toluol-sulphamide is now oxidized by being brought in contact with a dilute solution of potassium permanganate, and in proportion as alkali or alkali carbonate is separated, they are neutralized by the careful addition of acid. This causes the conversion of the amide into benzo-sulphimide and benzo-sulphaminic acid, which unites with the potassium of the permanganate. Finally,

* Enumeração das Substancias Brazileiras que podem promover a catarze. . . . por A. L. P. da Silva Manso. 8vo. Rio Janeiro, 1836, pp. 52.

† That is in general, any hydrocarbons of illuminating power.

on addition of acid to the solution, crystals of the benzo-sulphimide or "anhydro-ortho-benzo-sulphaminic acid," or "*saccharin*" are separated.

No. 1,889.—**Distinction Between Genuine and Imitation Brandy** (E. A. W.).

A very poor imitation of brandy may indeed, under certain circumstances, be discoverable by chemical tests. The latter, however, are, as a rule, unable to distinguish between a moderately good artificial brandy and the genuine article. It has been stated that the genuine has an acid reaction, which was absent in the artificial. But the latter is usually acid too. Again it was said that the former turns black with ferric chloride, while the latter does not. This, of course, depends on the receptacle the brandy has been kept in. As natural brandy is never considered good before it is at least three years old, it has plenty of chance to extract tannin from the cask it is kept in. Artificial brandy is usually thrown on the market sooner, and to impart to it the astringency which it would have acquired in the cask, some tincture of oak bark or other allied preparation is usually added to it. The best detective of imitation brandy is an experienced palate. But it is neither economical nor prudent for most people to try and bring their palate to such a pitch of education. They had better leave it to professional experts.

No. 1,890.—**Melinite** (Inquirer).

This is the name of a new explosive which has formed the subject of quite sensational reports respecting the preparations for war said to be made by various European governments. In fact, the article *melinite* is claimed to be an explosive exclusively owned by or known to the French. We are not aware what the exact composition of the explosive is, but from several foreign papers we learn that *ether* and *picric acid* form its principal components. In fact, the French Government is reported to make very a rge purchases of both of these articles in Germany itself, the monthly orders amounting to not less than 20,000 kilos (about 200 tons) of picric acid alone.

Some other European governments have also laid in supplies of certain explosives partly composed of picric acid. This sudden increased demand for picric acid has been the cause of the sharp advance in carbolic acid which has commenced towards the beginning of the present year.

No. 1,891.—**Estimation of Fatty Acids in Soap** ("Active").

We have several times given methods for estimating fatty acids in soaps. At the present time we shall give a new process, recently published by Dr. R. Bauer (*Journ. f. prakt. Chem.*, 35, 88), which is said to accomplish the object in the most expeditious and accurate manner.

Select two watch-glasses, a larger and smaller, place into the former a thin layer of fine glass pearls and upon this place the smaller glass, the layer of pearls answering the purpose of a sand-bath. Weigh the two glasses together. The smaller glass serves to receive the fatty acid. About 5 Gm. of the soap are placed into a flask of about 150 C.c. capacity, concentrated *glycerin* is poured on so as to cover it, and when the soap has become dissolved on heating, about 100 C.c. of alcohol are added. The *clear* solution is then titrated with hydrochloric acid, to determine the amount of alkali. An excess of acid is next added to separate the fatty acids, the latter are removed by means of a pipette with fine point, and transferred to the upper watch-glass. That portion of the fatty acid which cannot well be removed with the pipette is brought into solution by means of petroleum ether or benzin and strong agitation, and the resulting solution transferred by the pipette as before. This is continued until the watch-glass, after drying, is no longer found to increase in weight.

No. 1,892.—**Absolutely Pure Sulphate of Quinine** (M.).

Any commercial sulphate of quinine which responds to the requirements of the U. S. Pharmacopœia may be considered as sufficiently pure for all practical purposes. To separate from it every trace of other cinchona alkaloids would be a labor of supererogation, as the therapeutic activity of the salt is not affected in the least by the small percentage of other alkaloids present.

Nevertheless, an absolutely pure sulphate of quinine is a desirable article to have when there is special occasion to use it. It is made by several manufacturers, for instance C. Zimmer, of Frankfort-on-the-Main, but it must be asked for as such, and, of course, a somewhat higher price must be paid for it. It is in hard, heavy crystalline needles. Recently it has been stated, however, that a *pure* sulphate of quinine may also crystallize in the light, feathery form of the ordinary commercial sulphate (L. Schäfer in *Arch. d. Pharm.*, 1886, 848); but whether this is really the case with the *absolutely* pure salt seems doubtful.

No. 1,893.—**Pulv. Hdg.** (Pennsylvania).

"How would you compound this prescription, and what is Pulv. Hdg.?

"℞ Pulv. Hdg., gr. xxiv.; quinia sulph. gr. xvi., in 8 powders. Dose: one every 4 hours.

The abbreviation conveys no meaning probably to any one not familiar with the private formulas of the writer of it.

No. 1,894.—**Troublesome Prescription** (supplement to query 1,841, in our January number, page 10).

We have received a communication from a subscriber in Mississippi, in reference to the prescription containing:

Sodii Bicarb.	ʒ ss.
Spir. Menth. Pip.	fl. ʒ iss.
Tr. Capsici	fl. ʒ ij.
Spir. Frumenti	ad fl. ʒ iv.

He thinks that the red color is due to the fact that the sodium salt is insoluble in the spirits, and is colored red by the tincture of capsicum as well as by the coloring-matter of the whiskey.

In reply, we would say that we have prepared the mixture ourselves, with materials of good quality and known purity, and have not obtained the alleged result. The bottle now contains a pale, buff-colored sediment (the sodium salt) and a clear, brownish-yellow liquid.

No. 1,895.—**Liquefied Carbonic Acid Gas** (Dr. X.).

This may be obtained from O. Brunler, 837 Broadway.

No. 1,896.—**Pharmacy Law in Alabama** (A. E. W.).

There is yet no law in Alabama regulating the practice of pharmacy. The preliminary steps have been taken to secure one, and a draft for a law was reported at the annual meeting of the Alabama Pharmaceutical Association, on the 11th of May last, a copy of which can be had of Mr. P. C. Candidus, the Secretary, of Mobile.

No. 1,897.—**Unofficial Formularies** (E. W.).

"There are many pharmaceutical preparations prescribed by doctors, such as syrups, elixirs, etc., which are not contained in the pharmacopœia or the dispensatories. Can you recommend to me one of the most useful books for this purpose?"

There are many works which partly answer the purpose of our correspondent, but no one of them can be considered as comprehensive. To have anything like a complete set of unofficinal formulas is not practicable. The American Pharmaceutical Association has a work in course of preparation which will contain formulas for the articles most commonly called for; meanwhile we will endeavor to furnish subscribers with any particular one.

Freezing Mixture.—A liquid invented by Raoul Pictet, of Geneva, Switzerland, for use as a disinfectant, answers well as a freezing mixture for hardening microscope specimens. Sulphur dioxide and carbon dioxide, having been mixed and cooled, are compressed until they are liquid and stored in siphons. When liberated, they rapidly evaporate with great reduction of temperature. By this means mercury may be frozen, and animal or vegetable tissues rendered solid in a few seconds. It is as easily managed and more effective than ether, the odor being the principal objection.—*West. Drugg.*

Berberis Alkaloids, according to E. Schmidt, have the following properties: *Berberine* forms with chloroform stable compounds until heated to 100° C., treated with HCl or dilute alkaline solutions; when the chloroform is set free. It combines, also, with hydrogen sulphide, forming brown, glistening, needle-shaped crystals, differing in composition from similar combinations with strychnine and brucine. *Hydrastine* is easily produced in form of crystals the size of a walnut from its solution in acetic ether. *Oxyacanthine* is thought to be identical with the alkaloid recently derived from *Berberis Aquifolium.*

Sal Alembroth or ammonio-mercuric chloride, the basis of "Lister's solution" (containing 1%) used by some in the preparation of antiseptic dressings, is a double salt having the formula $NH_4ClHgCl_2$. It is prepared by subliming a mixture of mercuric and ammonium chloride in molecular proportions, or the solution may be made by dissolving 21 grains of the latter and 100 grains of the former in 26⅝ fl. ʒ (12,100 grains) of water, adding ¼ grain of aniline blue. The latter is used on account of its property of becoming red in presence of alkaline discharges.

Fluid Extract of Ergot.—E. C. Federer, of Detroit, Mich., investigated fluid preparations of ergot with a view to determining the possibility of improving upon the pharmacopœial preparation, and concludes that the one process, of seven which were tried, which gave best results was the pharmacopœial without abstraction of the oil; that glycerin alone, with water, or a small per cent of alcohol is of no benefit so far as keeping qualities are concerned, and that to free ergot from fat is not an advantage.

Pill-Coating.—A. Simon, of Paris (*Rép. de Pharm.*), investigated the alleged influence of Tolu balsam in interfering with the absorption of the active element of pills of protochloride of iron. Pills of 3 grs. of iodide of potassium were used in the experiments, and the urine was tested for the presence of iodine. Traces appeared in half an hour, and decided evidences in 40 minutes. Pills coated with cocoa butter gave results only about ten minutes sooner.

FORMULAS.

SELECTIONS FROM THE HOSPITAL FORMULARY

OF THE DEPARTMENT OF PUBLIC CHARITIES AND CORRECTION OF THE CITY OF NEW YORK.

(Continued from page 39.)

VII. OINTMENTS.

218. *Petrolatum Acidi Borici.* "*Boric Ointment.*"

℞ Acidi Borici, pulv.....part. 1
Petrolati.....part. 6

Melt about 1 part of the petrolatum at a very gentle heat, and triturate with it the boric acid, which should be in very fine powder, so that a perfectly homogeneous mass is produced. Then incorporate the remainder of the petrolatum.

219. *Petrolatum Cocainæ.*

℞ Cocainæ Hydrochloratis....gr. 2
Petrolati..... ℥2

Mix. To be applied to the conjunctiva every hour, in recent burns or injuries of the eye. (*Dr. W. F. Mittendorf.*)

220. *Petrolatum Hydrargyri Ammoniati (Bureau O. D. P.).*

℞ Hydrargyri Ammoniati....gr. 40
Petrolati..... ʒ 1

Mix.

221. *Petrolatum Hydrargyri et Plumbi (Bureau O. D. P.).*

℞ Hydrarg. Oxidi Rubri.....gr. 2
Liquor. Plumbi Subacet. . ♏ 7
Petrolati.....gr. 120

Mix. To be applied, at bed time, to edge of eyelids, in blepharadenitis. (*Dr. F. W. Mittendorf.*)

222. *Petrolatum Hydrargyri Oxidi Rubri (Bureau O. D. P.).*

℞ Hydrarg. Oxidi Rubri.....gr. 60
Petrolati..... ʒ 1

Mix intimately, taking care that the ointment is absolutely free from gritty particles.

223. *Petrolatum Iodoformi et Atropinæ (Bureau O. D. P.).*

℞ Iodoformi.....gr. 30
Atropinæ Sulphatis.....gr. 1
Petrolati..... ʒ ½

Mix. To be applied to the conjunctiva every evening, in chronic phlyctenular ulcers. (*Dr. F. W. Mittendorf.*)

224. *Petrolatum Physostigminæ. Unguentum Eserinæ.*

℞ Physostigminæ (*vel* Eserinæ) Salicylatis.....gr. 2
Petrolati..... ʒ ½

Mix. To be applied to the eye every four hours, in ulcers of cornea. (*Dr. W. F. Mittendorf.*)

225. *Petrolatum Zinci Salicylicum.* "*Salicylic Zinc Ointment.*"

℞ Acidi Salicylici.....gr. 15
Zinci Oxidi,
Amyli pulv.....āā ʒ 2½
Petrolati..... ℥ 1

Mix.

226. *Unguentum Antihæmorrhoidale. Pile Ointment.*

℞ Ceræ Flavæ.....part. 4
Resinæ..... " 2
Adipis..... " 6
Olei Sassafras..... " 1

Melt the wax, resin and lard together at a gentle heat, allow it to cool, and, before it has solidified, incorporate with it the oil of sassafras.

227. *Unguentum Calaminæ. Turner's Cerate.*

℞ Camphoræ Præparatæ.....part. 1
Unguenti (*vel* Petrolati).... " 1

Mix them.

228. *Unguentum Camphoræ.*

℞ Camphoræ.....parts 2
Ceræ Albæ..... " 1
Adipis..... " 6

Melt the white wax and lard at a gentle heat. Then add the camphor, and stir until cold.

229. *Unguentum Chrysarobini (Bureau O. D. P.).*

℞ Chrysarobini.....gr. 50
Unguenti (*vel* Petrolati)....gr. 500

Mix.

230. *Unguentum Fuscum (Char. Hosp.). Brown Ointment.*

℞ Argenti Nitratis.....gr. 80
Ext. Stramonii,
Ext. Belladonnæ. .....āā gr. 480
Ung. Hydrarg Ox. Rub.,
Cerati Plumbi Subacet. āā gr. 30
Bals. Peruviani... .. q. s. ad ℥ 16

Mix. To be applied to indolent ulcers.

Note.—The above mixture is chemically incompatible, and is known to be so by the physicians using it, but is reported to give satisfactory results.

231. *Unguentum Hydrargyri Oxidi Rubri Compositum (Bureau O. D. P.).*

℞ Ung. Hydrarg. Ox. Rub. (U. S. 10%),
Ung. Zinci Oxidi,
Ung. Acidi Carbolici.āā part. æq.

(*Dr. G. H. Bosley.*)

232. *Unguentum Hydrargyri Oxidi Rubri cum Plumbo (Bureau O. D. P.).*

℞ Hydrarg. Oxidi Rubri,
Plumbi Acetatis.....āā gr. 8
Unguenti..... ℥ 1

Mix intimately.

233. *Unguentum Metallorum (Bureau O. D. P.).*

℞ Ung. Zinci Oxidi,
Ung. Hydrarg. Nitratis,
Cerati Plumbi Subacetatis,
āā part. æq.

Mix. (*Dr. C. E. Lockwood.*)

234. *Unguentum Picis Alkalinum (Bureau O. D. P.).*

℞ Liquor. Picis Alkalini (No. 204).....gr. 60
Unguenti..... ℥ 1

Mix.

235. *Unguentum Picis Compositum.*

℞ Olei Picis Liquidæ.....part. 4
Cetacei..... " 6
Ceræ Flavæ..... " 22
Adipis..... " 32
Olei Gossypii..... " 35
Tinct. Benzoini..... " 2
Zinci Oxidi..... " 3

Melt the lard, white wax, and spermaceti with the cotton-seed oil at a gentle heat. Then add the tincture of benzoin, and continue heating until all the alcohol has escaped. Next add the oil of tar, and finally, the oxide of zinc, incorporating the latter thoroughly, so that, on cooling, a homogeneous ointment may result.

236. *Unguentum Potassii et Stramonii (Bureau O. D. P.).* "*Unguentum White,*" *White's Ointment.*

℞ Potassii Iodidi.....gr. 120
Unguenti Stramonii..... ℥ 1

Mix.

237. *Unguentum Sulphuris Compositum. Hebra's (or Wilkinson's) Ointment.*

℞ Calcii Carbonat. Præcip...part. 2
Sulphuris Sublimati..... " 3
Olei Cadini..... " 3
Saponis Viridis..... " 6
Adipis..... " 6

Melt the lard at a gentle heat. Then add the green soap and incorporate the other ingredients, stirring until the ointment is cold.

238. *Unguentum Zinci et Hydrargyri (Bureau O. D. P.).*

℞ Ung. Zinci Oxidi..... ..... ℥ 1
Ung. Hydrarg. Nitratis... ... ʒ 1½
Ung. Acidi Carbolici..... .. ʒ 4

Mix.

VII. PILLS.

PILL-EXCIPIENTS.—From the large number of pill-excipients which are in common use, or have been recommended, a few are quoted here as being perhaps the most suitable in general practice.

a. *For dark-colored Pills:*

Extract of Gentian.
Extract of Taraxacum.
Extract of Triticum Repens.

Pills containing no fibrous substances are apt to collapse or to run together. In such cases, powdered liquorice root, or gentian, or althæa, etc., etc., should be added.

b. *For light-colored or white Pills:*

1. Tragacanth, powd.. gr. 60
Glycerin..... " 180
Water..... " 80 Mix.

2. Acacia, powd. (or Dextrin).. gr. 90
Glycerin..... ....av. oz. 1
Glucose (pure, colorless).. " 4

Triturate the acacia with the glycerin, add the glucose and heat *gently*, until the acacia is dissolved.

3. Tragacanth, powd.av. oz. 1
Glycerin ..... " 4 to 6

Mix. The proportion of glycerin may be varied according to the object or the season.

4. Tragacanth, powd.av. oz. 1
Acacia, powd..... " 1
Starch, powd..... " 1
Sugar, powd..... " 3

Mix. Use a mixture of equal volumes of glycerin and water to make the mass.

c. *For Quinine Pills.*

1. Sulphate of Quinine...av. oz. 1
Tartaric Acid.....gr. 75

Make a mass, either with glycerin alone (about 54 grains); or with glycerin 2 parts, water 1 part (q. s.); or with water alone (16 to 20 min.)

2. Glycerite of Tragacanth. See above under b, 1.

3. Sulphate of Quinine....av. oz. 1
Althæa, powd..... .. gr. 60
Tartaric Acid.....gr. 40
Glycerin.....min. 10
Diluted Sulphuric Acid..fl. dr. 1
Glucose.....q. s.

The Glycerin may be omitted. The object of the acid is to reduce the size of the pills, in case this should be required.

239. *Pilulæ "Abernethy." Abernethy's Pills.*

℞ Massæ Hydrargyri.....gr. 10
Jalapæ pulv.....gr. 20
Syr. Rhamni Cathart ... .. q. s.

Mix. Divide into 6 pills.

240. *Pilulæ Aconitinæ, "Duquesnel."*

℞ Aconitinæ Nitrat. "Duquesnel".....gr. 1
Sacchari Lactis. .....gr. 50
Glycyrrhizæ pulv..... gr. 50
Ext. Gentianæ.....q. s.

Triturate the nitrate of aconitine (see under No. 159) thoroughly with the sugar of milk, in a small mortar; gradually mix with it the powdered liquorice root, taking *great care* that the mixture is rendered perfectly uniform. Then mix it with the extract and make 200 pills.

Each pill contains $\frac{1}{200}$ grain of nitrate of aconitine.

241. *Pilulæ Aloes Compositæ.*

℞ Aloes.....gr. 70
Olei Cari..... ♏ 6
Extr. Gentianæ.....q. s.

Mix. Divide into 20 pills.

242. *Pilulæ Aloes et Ferri.*

℞ Aloes,
Ferri Sulphatis Exsicc.,
Pulveris Aromatici.....ãã gr. 60
Strychninæ Acetat.....gr. 2
Confect. Rosæ.....q. s.

Mix. Divide into 60 pills.

243. *Pilulæ Aloes, Ferri et Taraxaci (Bureau O. D. P.).*

℞ Aloes.....gr. 60
Ferri Sulphatis Exsicc.....gr. 120
Ext. Taraxaci..... ...q. s.

Mix. Divide into 60 pills.

244. *Pilulæ Anticatarrhoicæ (Hager's Catarrh Pills).*

℞ Cinchonidinæ Sulphat.,
Quinidinæ Sulphat.....ãã gr. 75
Tragacanthæ pulv.....gr. 100
Althææ pulv.,
Gentianæ pulv... .. ..ãã gr. 45
Santali Rubri pulv .....gr. 15
Glycerini,
Acidi Hydrochlorici .. ãã gr. 110

Mix. Divide into 200 pills.

Dose. On feeling the least discomfort 5 pills are to be taken, and, if necessary, the dose is to be repeated in intervals of one hour.

245. *Pilulæ Antipodagricæ (White's Gout Pills).*

℞ Hydrarg. Chloridi Mitis,
Aloes,
Ipecacuanhæ pulv.,
Ext. Colchici Rad.....ãã gr. 60

Mix. Divide into 60 pills.

246. *Pilulæ Antirheumaticæ.*

℞ Ext. Colocynth. Comp.....gr. 45
Ext. Colchici Rad.....gr. 30
Ext. Hyoscyami,
Hydrarg. Chlor. Mitis...ãã gr. 10

Mix. Divide into 30 pills.

Note.—Ext. Colchici Radicis, U. S. Ph. 1880, is equivalent to *Extractum Colchici Aceticum*, U. S. Ph. 1870.

247. *Pilulæ Aperientes.*

℞ Ext. Aloes.... .....gr. 20
Rhei pulv .....gr. 10
Ext. Nucis Vomicæ..... .gr. 5
Ext. Taraxaci... .....gr. 30

Mix. Divide into 20 pills. (*Dr. W. T. Lusk.*)

248. *Pilulæ Bellevue.*

℞ Massæ Hydrargyri.....gr. 10
Aloes ....gr. 20
Res. Podophylli.....gr. 3
Ext. Hyoscyami.....gr. 10
Ext. Taraxaci.....q. s.

Mix. Divide into 20 pills.

249. *Pilulæ Cambogiæ Compositæ (Miller's Pills).*

℞ Cambogiæ,
Scammonii,
Aloes,
Hydrarg. Chlor. Mitis,
Potassii Bitart ..... ãã gr. 20
Ext. Taraxaci.....q. s.

Mix. Divide into 20 pills.

250. *Pilulæ Catharticæ ("Vegetable Cathartic Pills").*

℞ Ext. Colocynth. Comp.....gr. 36
Res. Podophylli .....gr. 9
Res. Leptandræ.... .....gr. 3
Jalapæ.....gr. 6
Aloes ....gr. 12
Ext. Hyoscyami.....gr. 6
Olei Menthæ Piper..... ♏ 5

Mix. Divide into 24 pills.

251. *Pilulæ Colchici.*

℞ Jalapæ pulv.,
Aloes,
Hydrarg. Chlor. Mitis,
Ext. Colchici Rad.....ãã gr. 12
Ext. Nucis Vomicæ.....gr. 3

Mix. Divide into 12 pills. One three times daily, or every three hours, until griping is felt. (*Dr. A. L. Loomis.*)

252. *Pilula contra Sudorem (Bell. Hosp.). ("Anti-Sweat Pill").*

℞ Zinci Oxidi.....gr. 2
Ext. Belladonnæ Alcohol...gr. $\frac{1}{4}$
Ext. Hyoscyami .....gr. $\frac{1}{2}$

Mix. One pill.

Note.—The oxide of zinc may be increased to 5 grains, the extr. of belladonna to one-fourth gr., and the ext. of hyoscyamus to 1 grain.

253. *Pilulæ Digitalis Compositæ.*

℞ Ipecac. pulv.,
Opii pulv.....ãã gr. 5
Quininæ Sulphatis,
Digitalis pulv.....ãã gr. 20
Ext. Gentianæ.....q. s.

Mix. Divide into 20 pills.

254. *Pilulæ Doveri.*

℞ Pulv. Ipecac et Opii.....gr. 10
Ext. Gentianæ..... ...q. s.

Mix. Divide into 3 pills.

255. *Pilula Duplex (Char. Hosp.). ("Pil. Duo.")*

℞ Massæ Hydrargyri.... .....gr. 2
Ferri Sulphat. Exsicc.....gr. 1

Mix. One pill.

256. *Pilulæ Elaterini Compositæ.*

℞ Tritur. Elaterini.....gr. 12
Res. Podophylli.....gr. 6
Hydrarg. Chloridi Mitis....gr. 24

Mix. Divide into 12 pills.

257. *Pilulæ Ferri Carbonatis. Blaud's (or Ferruginous) Pills.*

℞ Ferri Sulphatis.....gr. 240
Potassii Carbonatis.....gr. 140
Sodii Boratis.....gr. 2
Althææ pulv..... .. gr. 24
Tragacanthæ pulv.....gr. 8
Glycerini.....gtt. 3-4
Mucilag. Acaciæ.. .....gr. 130

Mix the sulphate of iron and carbonate of potassium, each previously reduced to powder, add the mucilage and triturate so that a green, pasty mass may be formed. Now add the borax and mix thoroughly. During the mixing, the mass will be felt to become harder, and after standing about fifteen minutes, it will have become almost pulverulent. Now, add the althæa and tragacanth and, with a few drops of glycerin, make a mass and divide it.

Note.—Coat the pills with an ethereal solution of balsam of Tolu as directed for *Pilulæ Ferri Iodidi* in the U. S. Ph.

258. *Pilulæ Ferri, Quininæ et Strychninæ.*

℞ Quininæ Sulphatis,
Ferri Reducti... .....ãã gr. 60
Strychninæ Acetatis.....gr. 1
Ext. Gentianæ.....q. s.

Mix. Divide into 60 pills.

259. *Pilulæ Hydragogæ (Heim's Hydrogogue Pills).*

℞ Cambogiæ,
Digitalis pulv.,
Scillæ pulv.,
Antimon. Sulphurati....ãã gr. 45
Ext. Taraxaci.....q. s.

Mix. Divide into 125 pills.

260. *Pilulæ Hyoscyami, Camphoræ et Morphinæ.*

℞ Ext. Hyoscyami.....gr. 40
Camphoræ... .....gr. 24
Morphinæ Sulphatis.....gr. 6

Mix. Divide into 24 pills.

261. *Pilulæ "Janeway" ("Janeway's Pills").*

℞ Res. Podophylli.....gr. 10
Aloes.....gr. 20
Ext. Belladonnæ,
Ext. Nucis Vomicæ... ..ãã gr. 5

Mix. Divide into 20 pills.

262. *Pilulæ Laxativæ, Cole (Cole's Laxative Pills).*

℞ Ext. Colocynth. Comp.....gr. 30
Hydrarg. Chloridi Mitis....gr. 10
Res. Podophylli..... ..gr. 1

Mix. Divide into 10 pills.

263. *Pilulæ Laxativæ, Crane (Crane's Laxative Pills).*

℞ Massæ Hydrargyri ....gr. 24
Aloes..... .....gr. 6
Olei Tiglii.....gtt. 1

Mix. Divide into 12 pills.

264. *Pilulæ Metallorum (Bureau O. D. P.).*

℞ Quininæ Sulphatis.....gr. 60
Ferri Reducti..... gr. 90
Acidi Arseniosi,
Strychninæ..... ..ãã gr. 3
Confect. Rosæ.....q. s.

Mix. Divide into 60 pills.

265. *Pilulæ Neuralgicæ, Brown-Séquard.*

℞ Ext. Hyoscyami,
Ext. Conii..... .....ãã gr. 40
Ext. Ignatiæ,
Ext. Opii.....ãã gr. 30
Ext. Aconiti.....gr. 20
Ext. Cannabis Ind..... ..gr. 15
Ext. Stramonii..... .. ....gr. 12
Ext. Belladonnæ.....gr. 10

Mix. Divide into 60 pills.

Note.—See No. 162: *Injectio Brown-Séquard Hypodermica*

266. *Pilulæ Neuralgicæ, Gross.*

℞ Quininæ Sulphatis.....gr. 120
Morphinæ Sulphatis.....gr. 3
Strychninæ .....gr. 2
Acidi Arseniosi.....gr. 3
Ext. Aconiti .....gr. 30

Mix. Divide into 60 pills.

267. *Pilulæ Olei Tiglii.*

℞ Olei Tiglii.....gtt. 1
Pulv. Tragacanth. Comp.....gr. 2
Saponis pulv.....gr. 1

Mix. One pill.

Note.—The above excipient may be replaced by crumb of bread.

268. *Pilulæ Opii, Belladonnæ et Tiglii ("Lead Colic Pill").*

℞ Opii Pulv.....gr. 1
Olei Tiglii.....gtt. 1
Ext. Belladonnæ.....gr. ½

Mix. One pill. (*Dr. A. L. Loomis.*)

269. *Pilulæ Opii, Camphoræ et Belladonnæ.*

℞ Opii Pulv.....gr. 12
Camphoræ.....gr. 12
Ext. Belladonnæ.....gr. 2

Mix. Divide into 12 pills.

270 *Pilulæ Opii et Camphoræ.*

℞ Opii Pulv.....gr. 1
Camphoræ.....gr. 2

Mix. One pill.

271. *Pilulæ Opii et Tannini.*

℞ Opii Pulv.....gr. 1
Acidi Tannici .....gr. 2

Mix. One pill.

272. *Pilulæ Plumbi et Opii.*

℞ Plumbi Acetatis.....gr. 2
Opii Pulv.....gr. 1

Mix. One pill.

273. *Pilulæ Podophylli Compositæ.*

℞ Res. Podophylli.....gr. 24
Cambogiæ.....gr. 60
Aloes.....gr. 240
Hydrarg. Chlor. Mitis,
Zingiberis pulv.,
Capsici pulv.....āā gr. 120
Ext. Taraxaci.....q. s.

Mix. Divide into 240 pills. (*Dr. E. G. Janeway.*)

274. *Pilulæ Podophylli Squibb (Squibb's Laxative Pills).*

℞ Res. Podophylli.....gr. 36
Ext. Belladonnæ Alc.....gr. 18
Capsici pulv.,
Sacchari Lactis.....āā gr. 144
Acaciæ pulv.....gr. 36
Glycerini.....ɱ 40
Syrupi.....q. s.

Mix. Divide into 144 pills.

275. *Pilulæ Post Partum (Barker's "Post Partum Pills").*

℞ Extr. Colocynth. Comp.....gr. 20
Ext. Aloes.....gr. 15
Ext. Hyoscyami.....gr. 10
Ext. Nucis Vomicæ.....gr. 5
Res. Podophylli,
Ipecacuanhæ pulv.....āā gr. 1

Mix. Divide into 12 pills. (*Dr. Fordyce Barker.*)

276. *Pilulæ pro Subinvolutione (Bell. Hosp.).*

℞ Ferri Reducti,
Quininæ Sulphatis.....āā gr. 48
Ergotini Purificati.....gr. 24
Strychninæ Sulphatis.....gr. ¼
Ext. Gentianæ.....q. s.

Mix. Divide into 24 pills.

Note.—The proportions of reduced iron and sulphate of quinine are sometimes altered. "Ergotin" is a name applied, *not* to an active principle, but to a purified extract of ergot, in which a large proportion of the inert constituents has been removed by means of alcohol.

277. *Pilulæ Quatuor (Bureau O. D. P.). (Pilulæ Ferri et Quininæ Compositæ.)*

℞ Ferri Sulphatis,
Quininæ Sulphatis,
Aloes.....āā gr. 20
Ext. Nucis Vomicæ.....gr. 5
Ext. Gentianæ.....q. s.

Mix. Divide into 20 pills.

278. *Pilulæ Quininæ et Ferri.*

℞ Quininæ Sulphatis.....gr. 40
Ferri Sulphat. Exsicc.....gr. 20
Ext. Nucis Vomicæ.....gr. 5

Mix. Divide into 20 pills.

279. *Pilulæ Quininæ et Piperinæ.*

℞ Quininæ Sulphatis.....gr. 20
Piperinæ.....gr. 30
Ext. Colocynth. Comp.....gr. 20

Mix. Divide into 20 pills. (*Dr. A. S. Heath.*)

280. *Pilulæ Rhei et Aloes Compositæ ("Rag's Pills").*

℞ Rhei pulv.,
Aloes,
Gentianæ pulv.,
Saponis pulv .....āā gr. 20

Mix. Divide into 20 pills.

281. *Pilulæ "Segur" (Segur"s Pills.)*

℞ Aloes.....gr. 60
Ext. Colocynth. Comp.,
Ext. Hyoscyami.....āā gr. 30
Ext. Nucis Vomicæ.....gr. 15

Mix. Divide into 30 pills.

282. *Pilulæ Townsend (Townsend's Pills).*

℞ Massæ Hydrargyri,
Cambogiæ,
Ext. Aloes,
Zingiberis pulv.....āā gr. 30
Olei Menthæ Pip.....ɱ 4
Tinct. Aloes.....q. s.

Mix. Divide into 24 pills.

283. *Pilula Triplex.*

℞ Aloes,
Scammonii,
Massæ Hydrargyri.....āā gr. 48
Olei Tiglii.....ɱ 2
Olei Cari .....ɱ 9
Tinct. Aloes et Myrrhæ.....ɱ 12

Mix. Divide into 40 pills. (*Dr. John W. Francis.*)

284. *Pilulæ "Walker" (Walker's Pills).*

℞ Ext. Nucis Vomicæ,
Ext. Belladonnæ.....āā gr. 5
Ferri Sulphat. Exsicc.,
Ext. Aloes.....āā gr. 10

Mix. Divide into 20 pills. (*Dr. H. F. Walker.*)

(To be continued.)

Cockroaches may be driven away according to the *Süd-deutsche Ap. Zeit.*, by sprinkling about the place frequented by them, a mixture of

Borax, powd.....2 parts.
Acetate of Lead, powd....1 part.
Wheat Flour.....3 parts.

Saddler's Wax, according to the *Wiener Drug. Zeit.*, consists of (1) wax, 4; rosin, 1—(2) wax, 10; rosin, 2; turpentine, 1—(3) white wax, 8; olive oil, 1; rosin, 6—(4) white wax, 24; rosin, 12; tallow, 4; olive oil, 1. Melt the ingredients, and stir until cool.

BIBLIOGRAPHY.

THE NATIONAL DISPENSATORY. Containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicines. Including those recognized in the Pharmacopœias of the United States, Great Britain, and Germany, with numerous references to the French Codex. By ALFRED STILLÉ, M.D., LL.D., etc., and JOHN M. MAISCH, Phar.D., etc. Fourth edition, revised and improved. With 311 illustrations. Philadelphia: Henry C. Lea's Son & Co., 1886, pp. 1781. Royal 8vo.

IN the absence of both space and time for reviewing a work which has so thoroughly established itself, and which we have so recently commented on, we quote from the preface to this edition the statements that the recent publication of the British Pharmacopœia has been followed by careful revision of the references in this publication. In the form of "Addenda," information is given concerning a considerable number of new remedies, these new portions being comprised in twenty-five pages.

POCKET MEDICAL FORMULARY, arranged Therapeutically by ALEXANDER HAZARD, M.D., and BERNARD GOLDBERG, M.D. Revised and enlarged by ABRAHAM S. GERHARD, A.M., M.D., etc. With an Appendix containing Formulas and Doses of Hypodermic Medication; a table of Eruptive Fevers; and Poisons, their Symptoms, Antidotes, and Treatment. Philadelphia, Pa., 1886.

THIS book is 3½ by 6 inches, bound in morocco, with pocket and tuck. It has blank pages for additional formulas, is indexed on the margin, and containes 1,102 formulas, besides other matters enumerated in the title.

YEAR BOOK OF PHARMACY. Comprising Abstracts of Papers relating to Pharmacy, Chemistry, and Materia Medica, contributed to British and Foreign Journals, from July 1st, 1885, to June 30th, 1886, with the Transactions of the British Pharmaceutical Conference, at the XXIII. Annual Meeting, held at Birmingham, Sept., 1886. London: J. & A. Churchill, 1886, pp. 606. 8vo.

THIS volume of the Year Book is edited by Louis Siebold, F.I.C., F.C.S., and contains an unusually large number of abstracts of papers and other matters of interest to pharmacists.

THE PRINCIPLES OF PHARMACOGNOSY. An Introduction to the Study of the Crude Substances of the Vegetable Kingdom. By FRIED. FLÜCKIGER, Ph.D., etc., and ALEX. TSCHIRCH, Ph.D., etc. With 186 illust. Translated from the second . . . edition by FREDERICK B. POWER, Ph.D., Prof. of Mat. Med. and Pharm. in the University of Wisconsin. 8vo. New York, 1887.

THE wish we expressed, when noticing the German original of this important work (on page 236 of our vol. for 1885), that a competent person would undertake a translation of it, has been fulfilled. Prof. Power has accomplished the task in a most satisfactory manner, and has successfully overcome the many difficulties encountered during the translation. No one who has not himself tried his hand upon it can fairly realize the onus of the task of translating a work of this kind, in which proper English equivalents had often to be newly coined for new technical terms. We congratulate the authors and the translator upon the successful introduction of the work to the profession of all English-speaking countries. The publishers have done their share to make the volume worthy of the contents.